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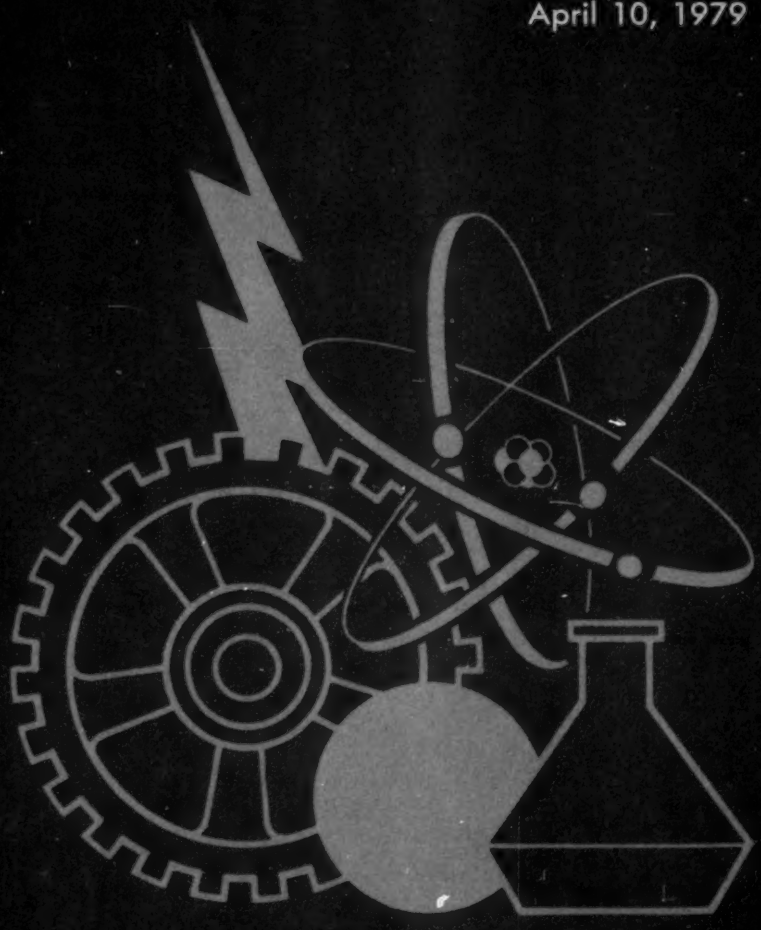

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) : Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of October 3, 1978.

DONALD W. BANNER.
Nov. 7, 1978. *Commissioner of Patents and Trademarks.*

Patent Suits

Notices under 35 U.S.C. 290 : Patent Act of 1952

2,352,242, Maurice Apstein, POTENTIAL RECORDING MARKER; **2,576,487,** Autogiro Company of America, DEICING SYSTEM FOR AIRCRAFT SUSTAINING ROTOR BLADES; **2,761,521,** Autogiro Company of America, HELICOPTER ROTOR CONTROL MECHANISM, **filed** July 10, 1963, U.S. Court of Claims (Washington, D.C.), Doc. 188–63, *Autogiro Company of America* v. *The United States.* Judgment entered for plaintiff and against defendant on July 8, 1977.

2,576,487. (See 2,352,242.)

2,761,521. (See 2,352,242.)

2,841,961, DeLong Corporation, OFF-SHORE DRILLING BARGE, **filed** May 17, 1976, D.C.N.J. (Newark), Doc. 76–903, *DeLong Corporation* v. *Raymond International, Inc.* Order granting summary judgment, filed Jan. 9, 1979.

2,875,450, Harry Mark Umann, SANITARY FIXTURE; **3,196,250,** same, HOT AIR BLOWER; **3,247,524,** same, SOLENOID-OPERATED, SHUT-OFF AND REGULATOR VALVE; **3,308,847,** same, HYGIENIC APPARATUS FOR USE IN TOILET BOWLS, **filed** May 3, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77–1600–IH, *Rusco Industries, Inc. et al.* v. *Joseph Robinson, doing business as American Bidet Service Co.* Plaintiffs have right to sue and recover for infringement, to be binding against defendant, filed Dec. 18, 1978.

2,966,632, RCA Corporation, MULTISTAGE SEMI-CONDUCTOR SIGNAL TRANSLATING CIRCUITS, **filed** Feb. 6, 1974, D.C. Del. (Wilmington), Doc. C.A. 74–26, *RCA Corporation* v. *General Motors Corporation.* The complaint, counterclaim and amended counterclaim are dismissed with prejudice, filed Feb. 12, 1979. **Same, filed** Feb. 13, 1979, D.C., U.S. Court of Claims (Washington, D.C.), Doc. 52–79, *RCA Corporation* v. *John Farley.*

3,032,345, Jerome H. Lemelson, TARGET GAME; **3,857,566,** Jerome H. Lemelson and Allan M. Elfman, ADHESIVE SURFACE DART AND SHOCK ABSORBING TARGET, **filed** Sept. 14, 1978, D.C., S.D.N.Y., Doc. 78–C–4335, *Jerome H. Lemelson* v. *Synergistics Research Corp.*

3,048,581, E. R. Squibb & Sons, ACETALS AND KETALS of 16, 17-DIHYDROXY STEROIDS, **filed** Mar. 26, 1976, D.C.N.J. (Newark), Doc. 76–560, *Premo Pharmaceutical Laboratories, Inc.* v. *E. R. Squibb & Sons, Inc.* Consent judgment for permanent injunction, dismissal of complaint and plaintiff's first counterclaim in favor of defendant and against plaintiff, filed Dec. 28, 1978.

3,049,399, H. E. Burroughs & Associates, Inc., COMPOSITION AND METHOD FOR DEODORIZING AIR, **filed** Sept. 12, 1977, D.C., S.D. Tex. (Houston), Doc. CA H–77–1508, *H. E. Burroughs & Associates, Inc.* v. *Contamination Control, Inc.* Defendants are enjoined and restrained from making, using and/or selling any compound, etc. comprising an inorganic activated water adsorbing substrate, etc. during life of 3,049,399, filed Dec. 27, 1978.

3,065,750, Frederick Lewis, HAIR STRAIGHTENING METHOD AND APPARATUS, **filed** July 27, 1977, D.C., S.D.N.Y., Doc. 77–C–3620, *Frederick Lewis* v. *Clairol, Incorporated et al.*

3,077,724, Leesona Corporation, APPARATUS FOR PROCESSING YARNS; **3,091,912,** same, METHOD OF PROCESSING STRETCH YARN AND YARNS PRODUCED THEREBY, **filed** Sept. 23, 1977, D.C., M.D.N.C. (Greensboro), Doc. C–77–458–G, *Lez Tex Ltd. Inc.* v. *Heberlein, Incorporated.* Case closed on Dec. 11, 1978 by notice of dismissal as part of MDL 82 transferred to S.D. Fla. on Nov. 17, 1977.

3,091,912. (See 3,077,724.)

3,120,158, J. M. Macchione, METHOD OF AND APPARATUS FOR PRODUCING TUBES OF POLYGONAL CROSS SECTION; **Re. 25,320,** same **filed** Nov. 18, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3332, *Precision Paper Tube Company* v. *Schumacher Electric Corporation.* Complaint dismissed with prejudice, entered Apr. 2, 1975.

3,151,613, Howard Herman-Howard, SNOW AND ICE MELTING DEVICE, **filed** Feb. 2, 1979, D.C., E.D.N.Y. (Westbury), Doc. 79–C–297, *Therma Melter Co.* v. *Encore House.*

3,158,117, Donald W. Samuels, THREAD CUTTER, **filed** Feb. 12, 1979, D.C., E.D. Mo. (St. Louis), Doc. 79–161C(1), *Weiss-Samuels, Inc.* v. *Willcox & Gibbs, Inc.*

3,166,334, Regal Tool & Rubber Co., MULTIPLE ELEMENT SWAB, **filed** Sept. 20, 1978, D.C., N.D. Tex. (Dallas), Doc. CA3–78–1166, *Regal Tool & Rubber Co., Inc.* v. *Oil States Rubber Co.* Defendant et al. are restrained and enjoined from infringing plaintiff's Patent No. 3,166,334.

3,196,250. (See 2,875,450.)

3,214,506, George T. Corbin, Jr., METHOD FOR MAKING HOLLOW PLASTIC ROTATIONAL CASTING AND FOR REMOVING CASTING FROM MOLD; **3,312,575,** same, METHOD OF MAKING METALLIC-LINED PRESSURE VESSEL; **3,357,875,** same, MULTI-PART HOLLOW CASTING, **filed** May 12, 1975, D.C.N.J. (Camden), Doc. 75–0799, *George T. Corbin, Jr.* v. *Remcor, Inc.* Order dismissing complaint with prejudice, filed June 9, 1978.

3,247,524. (See 2,875,450.)

3,263,678, Joseph H. Everston, THERAPEUTIC BATHTUB HAVING PLURAL ASPIRATING FITTINGS, **filed** June 15, 1976, D.C., N.D. Ill. (Chicago), Doc. 76c2219, *The Celotex Corp.* v. *The Jacuzzi Research Inc.* Case dismissed on Mar. 18, 1977 and case reversed and remanded on Nov. 2, 1978.

3,308,847. (See 2,875,450.)

3,312,575. (See 3,214,506.)

3,313,545, J. R. Bartsch, UNITARY MOLDED GOLF BALL, **filed** Dec. 18, 1978, D.C., C.D. Calif. (Los Angeles), Doc. 78–4814 R, *Kumho U.S.A., Inc.* v. *PGR Golf Ball Co., Inc.*

3,315,040, General Cable Corporation, RETRACTILE CORD GROMMET FOR TELEPHONE SUBSCRIBER HAND SETS, **filed** Dec. 28, 1978, D.C., W.D.N.C. (Statesville), Doc. ST–C–78–67, *General Cable Corporation* v. *Superior Cable Corporation.*

3,357,875. (See 3,214,506.)

3,361,803, Zbigniew J. Augustynowicz, PROCESS FOR THE PRODUCTION OF ISOPHTHALIC AND TEREPHTHALIC ACIDS, **filed** Jan. 8, 1979, D.C.S.C. (Columbia), Doc. 79–0048, *Societa Italiana Serie Acetica Sintetica, S.p.A.* v. *Eastman Kodak Company.*

3,523,889, Amstar Corporation, METHOD AND APPARATUS FOR SEPARATING LIQUIDS FROM SOLIDS, **filed** Jan. 10, 1979, D.C. Utah (Salt Lake City), Doc. C–79–0023, *Amstar Corporation* v. *Envirotech Corporation and Energy Fuels Nuclear, Inc.* **Same, filed** Jan. 15, 1979, D.C. Del. (Wilmington), Doc. 79–21, *Amstar Corporation* v. *Arthur G. McKee & Co. and Envirotech Corp.*

3,777,423, Rixson-Firemark, Inc., CONDITION RESPONSIVE DOOR HOLDER-CLOSER, **filed** Aug. 13, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2297, *Rixson-Firemark, Inc.* v. *Republic Industries, Inc.* Case closed pursuant to order dated Oct. 7, 1977.

3,779,830, Willi E. Reppel, APPARATUS FOR RETREADING TIRES; **3,779,831,** same; **3,779,832,** same; **3, 779,833,** same, **filed** Apr. 12, 1978, D.C., N.D. Calif. (San Francisco), Doc. C78–810WWS, *Vulcan Equipment Co.* v. *Oliver Tire & Rubber Company.* Dismissal with prejudice, filed Dec. 26, 1978.

3,779,831. (See 3,779,830.)

3,779,832. (See 3,779,830.)

3,779,833. (See 3,779,830.)

3,789,442, Sidney Tobinick, LIGHT-WEIGHT MINIMUM VOLUME WATER PAD WITH INTEGRAL WATER CONTAINER SECUREMENT MEANS, **filed** June 9, 1978, D.C., N.D. Calif. (San Francisco), Doc. C-78-1265-SAW, *National Mattress Co.* v. *Intimate Sleep Products, Inc. and Aqua Therm Products Corp.* Plaintiff's notice of voluntary dismissal, filed Dec. 11, 1978.

3,807,069, Robert Daley, INDEXING DEVICE, **filed** Sept. 27, 1976, D.C. Mass. (Boston), Doc. CA76-3484-MA, *Robert Daley et al.* v. *Grafton Printing Co. Inc.* The patent is invalid and complaint dismissed on Jan. 8, 1979.

3,807,110, Pate Manufacturing Company, MULTIPURPOSE ROOF PENETRATING CURB, **filed** Oct. 25, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3092, *The Pate Company* v. *RPS Corporation.* Plaintiff to pay compensatory damages for patent infringement. Defendant to pay exemplary damages for unfair competition, filed Dec. 28, 1978.

3,834,052, William F. Steck III, MOUNT FOR GUNSIGHT, **filed** Jan. 8, 1979, D.C., N.D. Ind. (Fort Wayne), Doc. F79-0003, *James Van Holten* v. *W. R. Weaver Company.*

3,850,112, Ray Jaski, FILLER DEVICE, **filed** July 17, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c2367, *York Container Corporation* v. *Inland Container Corp.*

3,857,506. (See 3,032,345.)

3,858,300, Henry Borel, JACKSCREW DEVICE, **filed** Jan. 15, 1979, D.C., S.D. Tex. (Houston), Doc. CAH-79-84, *Henry Borel* v. *Central Supply Co. et al.*

3,867,806, Lantech Inc., PROCESS OF MAKING A STRETCHED-WRAPPED PACKAGE, **filed** Aug. 21, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c2817, *Lantech Inc.* v. *Interlake Inc.* Pursuant to stipulation, the cause is dismissed, Nov. 1, 1976.

3,870,223, The Mead Corporation, DOUBLE WING POCKET PORTFOLIO AND FILE FOLDER, **filed** Jan. 10, 1979, D.C., S.D. Miss. (Jackson), Doc. J79-0011(C), *The Mead Corporation* v. *National Blank Book Company, Inc.*

3,897,597, Margaret E. Kasper, FACE AND HEAD PROTECTOR, **filed** May 21, 1976, D.C., N.D. Ill. (Chicago), Doc. 76c1917, *Margaret E. Kasper* v. *Cooper Canada Limited.* Cause is hereby dismissed with leave to reinstate, Mar. 4, 1977.

3,978,681, William L. Kjelgaard, METHOD AND APPARATUS FOR THE ADIABATIC EXPANSION OF LIQUID ANHYDROUS AMMONIA, **filed** Dec. 15, 1978, D.C., Nebr. (Omaha), Doc. CV78-0-550, *United States Steel Corporation* v. *Daniel H. Brobst and Brobst and Associates.*

3,990,767, Thomas & Betts Corporation, ELECTRICAL CONTACT AND CONNECTOR MEANS EMPLOYING SAME, **filed** Dec. 27, 1978, D.C. Del. (Wilmington), Doc. 78-552, *Thomas & Betts Corporation* v. *Winchester Electronics Division of Litton Systems, Inc.*

4,038,661, Charles P. Nolte, TUNING LOOP FOR ATTACHMENT TO A CITIZENS BAND RADIO ANTENNA, **filed** Dec. 26, 1978, D.C., N.D. Tex. (Fort Worth), Doc. CA4-78-432, *Charles P. Nolte* v. *Jasco Products Co., Inc. et al.*

D. 247,834, Crestline Furniture Company, Inc., SOFA, **filed** Jan. 3, 1979, D.C., W.D.N.C. (Statesville), Doc. ST-C-79-1, *Hickory Hill Furniture Company, Inc.* v. *Bassett Furniture Industries of North Carolina, Inc. et al.*

Re. 25,820. (See 3,120,158.)

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

D. 228,010, Re. S.N. 964,505, Filed Feb. 8, 1979, Cl. 40/1 E, COMBINED MOWER, CONDITIONER AND WINDROWER, Merle K. Burkhart, et al., Owner of Record: *Hesston Corporation, Hesston, Kans.,* Attorney or Agent: Gordon D. Schmidt, et al., Ex. Gp.: 290

3,435,120, Re. S.N. 974,625, Filed Dec. 29, 1978, Cl. 273/54, AUTOMATIC BOWLING SCORER, William D. Cornell, et al., Owner of Record: *Brunswick Corporation, Skokie, Ill.,* Attorney or Agent: Ernest A. Wegner, et al., Ex. Gp.: 334

3,488,055, Re. S.N. 974,627, Filed Dec. 29, 1978, Cl. 273/54, BOWLING SCORING APPARATUS AND PROGRAMMING SYSTEM THEREFOR, Eugene E. Reynolds, Owner of Record: *Brunswick Corporation, Skokie, Ill.,* Attorney or Agent: Ernest A. Wegner, et al., Ex. Gp.: 334

3,574,721, Re. S.N. 007,717, Filed Jan. 30, 1979, Cl. 562/507, PREPARATION OF ANTIFIBRINOLYTICALLY ACTIVE ISOMER OF 4-AMINOMETHYLCYCLOHEXANE CARBOXYLIC ACID, Bengt Olof Melander, et al., Owner of Record: *AB Kabi, Stockholm, Sweden,* Attorney or Agent: A. A. Orlinger, Ex. Gp.: 126

3,646,176, Re. S.N. 962,373, Filed Nov. 20, 1978, Cl. 264/11, METHOD FOR PRODUCING LOW OXIDE METAL POWDERS, Maurice D. Ayers, Owner of Record: *Metal Innovations, Inc., Stamford, Conn.,* Attorney or Agent: Hubert T. Mandeville, et al., Ex. Gp.: 147

3,680,344, Re. S.N. 006,522, Filed Jan. 25, 1979, Cl. 72/201, SYSTEM FOR COOLING LARGE, HOT METAL SLABS, Willi Manthey, et al., Owner of Record: *BWG Bergwerk-und Walzwerk-Maschinenbau GmbH, Duisburg, Germany,* Attorney or Agent: Karl F. Ross, Ex. Gp.: 321

3,858,793, Re. S.N. 002,388, Filed Jan. 10, 1979, Cl. 233/2, CARTRIDGE CENTRIFUGE, Denis J. Dudrey, Owner of Record: *Donaldson Company, Inc., Minneapolis, Minn.,* Attorney or Agent: John D. Gould, et al., Ex. Gp.: 353

3,891,910, Re. S.N. 001,542, Filed Jan. 8, 1979, Cl. 318/572, MACHINE TOOL MOTOR CONTROL WITH POSITION OFFSET, Tom T. Kumagai, et al., Owner of Record: *Houdaille Industries, Inc., Buffalo, N.Y.,* Attorney or Agent: J. Arthur Gross, et al., Ex. Gp.: 217

3,895,498, Re. S.N. 006,521, Filed Jan. 25, 1979, Cl. 62/64, APPARATUS AND METHOD FOR COOLING METAL SLABS WITH A UNITARY STRUCTURE FOR DEPOSITING AND GRASPING THE SLABS, Willi Manthey, et al., Owner of Record: *BWG Bergwerk-und Walzwerk-Maschinenbau GmbH, Duisburg, Germany,* Attorney or Agent: Karl F. Ross, Ex. Gp.: 344

3,950,061, Re. S.N. 970,470, Filed Dec. 18, 1978, Cl. 339/93 L, SOCKET FOR WEDGE BASE LAMP, Theodore Kausen, Owner of Record: *Industrial Devices, Inc., Edgewater, N.J.,* Attorney or Agent: Paul Fields, Ex. Gp.: 322

3,952,102, Re. S.N. 003,001, Filed Jan. 12, 1979, Cl. 424/276, INSECTICIDAL COMPOSITION FOR ULTRA LOW VOLUME APPLICATION, Heinz Frensch, et al., Owner of Record: *Hoechst Aktiengesellschaft, Frankfurt am Main, Germany,* Attorney or Agent: Henry W. Koster, Ex. Gp.: 125

3,978,806, Re. S.N. 006,668, Filed Jan. 26, 1979, Cl. 114/260, VESSEL FOR TRANSPORT OF BARGES WITH FLOTATION LOADING AND UNLOADING, William Everett Kirby, et al., Owner of Record: *Wharton Shipping Corp., Panama City, Panama,* Attorney or Agent: Robert E. Wickersham, Ex. Gp.: 315

3,996,375, Re. S.N. 003,039, Filed Jan. 12, 1979, Cl. 424/276, INSECTICIDAL COMPOSITION FOR ULTRA LOW VOLUME APPLICATION, Heinz Frensch, et al.,

Owner of Record: *Hoechst Aktiengesellschaft, Frankfurt am Main, Germany,* Attorney or Agent: Henry W. Koster, Ex. Gp.: 125

3,997,137, Re. S.N. 968,799, Filed Dec. 12, 1978, Cl. 244/169, MINIMIZATION OF RESIDUAL SPACECRAFT NUTATION DUE TO DISTURBING TORQUES, Kevin John Phillips, Owner of Record: *RCA Corporation, Princeton, N.J.,* Attorney or Agent: Joseph D. Lazar, Ex. Gp.: 315

4,005,155, Re. S.N. 004,492, Filed Jan. 18, 1979, Cl. 260/851, POLYMERIC COMPOSITIONS, Keith George Sampson, et al., Owner of Record: *Laporte Industries Limited, London, England,* Attorney or Agent: Robert B. Larson, et al., Ex. Gp.: 142

4,016,707, Re. S.N. 973,422, Filed Dec. 26, 1978, Cl. 53/24, METHOD OF VACUUM PACKAGING COMPRESSIBLE MATERIALS AND APPARATUS, John Edward Puchosic, Owner of Record: *Johns-Manville Corporation, Greenville Village, Colo.,* Attorney or Agent: Joseph J. Kelly, Ex. Gp.: 324

4,019,196, Re. S.N. 006,661, Filed Jan. 26, 1979, Cl. 357/17, INDICATING ELEMENT AND METHOD OF MANUFACTURING SAME, Toru Teshima, et al., Owner of Record: *Stanley Electric Co., Ltd., Tokyo, Japan,* Attorney or Agent: Stephen H. Frishauf, et al., Ex. Gp.: 254

4,024,011, Re. S.N. 969,302, Filed Dec. 14, 1978, Cl. 156/299, LABEL APPLICATOR WITH REPETITIVE SEQUENTIAL FIRING ORDER AND METHOD, Michael Crankshaw, et al., Owner of Record: *Compac Corporation, Netcong, N.J.,* Attorney or Agent: Gordon L. Peterson, Ex. Gp.: 161

4,069,210, Re. S.N. 005,521, Filed Jan. 22, 1979, Cl. 260/29.2 EP, POLYMERIC PRODUCTS, Karl F. Schimmel, Owner of Record: *P.P.G. Industries, Inc., Pittsburg, Pa.,* Attorney or Agent: William J. Uhl, Ex. Gp.: 142

4,089,725, Re. S.N. 969,301, Filed Dec. 14, 1978, Cl. 156/299, APPARATUS AND METHOD FOR TRANSMITTING ELEMENTS TO ARTICLES, Michael Crankshaw, et al., Owner of Record: *Label-Aire Inc., Montebello, Calif.,* Attorney or Agent: Gordon L. Peterson, Ex. Gp.: 161

4,093,378, Re. S.N. 968,053, Filed Dec. 11, 1978, Cl. 355/76, ALIGNMENT APPARATUS, Andrew Frederick Horr, et al., Owner of Record: *International Business Machines Corporation, Armonk, N.Y.,* Attorney or Agent: Francis J. Thornton, et al., Ex. Gp.: 211

4,096,425, Re. S.N. 006,499, Filed Jan. 25, 1979, Cl. 318/561, SERVO SYSTEMS, Ian Francis Brown, et al., Owner of Record: *Ferranti Limited, Hollinwood, England,* Attorney or Agent: Edward J. Kondracki, Ex. Gp.: 217

4,096,583, Re. S.N. 003,718, Filed Jan. 15, 1979, Cl. 365/130, 2½ D CORE MEMORY, Kurt O. Wright, et al., Owner of Record: *Ampex Corporation, Redwood City, Calif.,* Attorney or Agent: Robert G. Clay, Ex. Gp.: 235

4,097,628, Re. S.N. 007,037, Filed Jan. 29, 1979, Cl. 428/43, CARPET RUNNER, Albert B. Cheris, et al., Owner of Record: *Tenex Corporation, Elk Grove Village, Ill.,* Attorney or Agent: Ernest A. Wegner, et al., Ex. Gp.: 164

4,102,843, Re. S.N. 006,132, Filed Jan. 24, 1979, Cl. 260/29.6 RW, DISPERSING PAINT PIGMENTS, Peter Reeves Sperry, et al., Owner of Record: *Rohm and Haas Company, Philadelphia, Pa.,* Attorney or Agent: Robert A. Doherty, et al., Ex. Gp.: 141

4,116,207, Re. S.N. 008,178, Filed Jan. 30, 1979, Cl. 136/89 H, SOLAR PANEL WITH MAT BASE MEMBER, Ramon Dominguez, Owner of Record: *Solarex Corp., Rockville, Md.,* Attorney or Agent: Walter D. Ames, Ex. Gp.: 114

PATENT NOTICES

Certificates of Correction for the Week of Apr. 10, 1979

D. 248,878	4,107,084	4,115,143	4,126,320
3,789,770	4,107,186	4,115,170	4,126,342
3,848,905	4,107,612	4,115,250	4,126,412
3,851,127	4,107,876	4,115,621	4,126,527
3,887,523	4,107,940	4,115,747	4,126,538
3,916,246	4,108,735	4,116,403	4,126,577
3,925,074	4,108,766	4,116,762	4,126,838
3,940,537	4,108,783	4,116,853	4,127,057
3,986,742	4,108,859	4,116,934	4,127,141
3,989,653	4,108,930	4,116,982	4,127,307
4,005,719	4,109,049	4,117,066	4,127,384
4,018,889	4,109,144	4,117,196	4,127,606
4,024,193	4,109,185	4,118,160	4,127,724
4,036,237	4,109,242	4,118,223	4,127,833
4,042,702	4,109,527	4,118,235	4,127,850
4,043,805	4,109,650	4,118,306	4,128,546
4,046,889	4,109,689	4,119,961	4,128,628
4,062,357	4,109,749	4,120,004	4,128,823
4,063,025	4,109,872	4,120,179	4,128,981
4,063,135	4,110,074	4,120,516	4,129,052
4,063,179	4,110,166	4,120,736	4,129,091
4,066,003	4,110,220	4,121,012	4,129,141
4,066,667	4,110,391	4,121,950	4,129,299
4,072,930	4,110,496	4,122,019	4,129,517
4,077,801	4,110,514	4,122,327	4,129,558
4,081,754	4,110,577	4,122,798	4,129,653
4,091,296	4,110,693	4,122,813	4,129,694
4,091,298	4,110,752	4,122,859	4,129,708
4,095,059	4,110,771	4,123,099	4,130,041
4,095,161	4,110,892	4,123,176	4,130,278
4,096,068	4,111,320	4,123,744	4,130,477
4,096,222	4,111,440	4,123,782	4,130,533
4,096,988	4,111,504	4,123,987	4,130,550
4,097,556	4,111,680	4,124,126	4,130,689
4,098,083	4,111,809	4,124,315	4,130,934
4,099,564	4,111,914	4,124,319	4,130,975
4,099,909	4,111,996	4,124,356	4,131,191
4,102,143	4,112,019	4,124,379	4,131,224
4,103,113	4,112,148	4,124,455	4,131,684
4,103,507	4,112,223	4,124,524	4,131,730
4,103,848	4,112,247	4,124,549	4,131,911
4,104,472	4,112,291	4,124,589	4,132,095
4,104,481	4,112,312	4,125,231	4,132,397
4,104,566	4,112,460	4,125,363	4,132,735
4,104,948	4,112,475	4,125,426	4,132,937
4,104,987	4,112,517	4,125,624	4,133,625
4,105,074	4,113,500	4,125,631	4,133,962
4,105,251	4,113,556	4,125,666	4,134,069
4,105,331	4,113,707	4,125,714	4,134,082
4,105,437	4,113,933	4,125,734	4,136,265
4,106,607	4,114,040	4,126,143	
4,106,941	4,114,552	4,126,278	
4,107,008	4,114,604	4,126,317	

Dedication

4,122,700.—Wayne G. Granzow, Middletown, Ohio, PROCESS FOR FORMING SHEET METAL STOCK. Patent dated Oct. 31, 1978. Dedication filed Feb. 2, 1979, by the assignee, *Armco Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

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These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 10, 1979

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-7-78
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-16-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, Treating Processes, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-15-78
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-23-78
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-28-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	10-12-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear and Reactors; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptograph; Laser Devices; Radioactive Materials; Power Metallurgy, Rocket Fuels.	10-26-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-26-78
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-26-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-1-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-2-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-18-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-1-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-17-78
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	12-2-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Textiles; Apparel and Shoes; Sewing Machines; Machine Elements; Clutches.	11-2-77

Expiration of patents: The patents within the range of numbers indicated below expire during March 1979, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,023,412 to 3,027,557, inclusive
Plant Patents..... Numbers 2,133 to 2,134, inclusive

REISSUES

APRIL 10, 1979

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

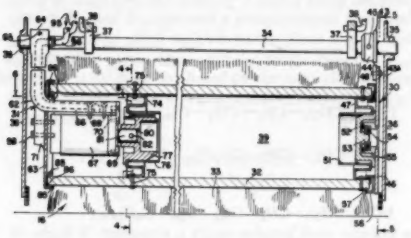
Re. 29,957
POWERED ROTARY BRUSH

Joseph G. Kasper, Minneapolis, Minn., assignor to Tennant Company, Minneapolis, Minn.

Original No. 3,113,332, dated Dec. 10, 1963, Ser. No. 205,243, Jun. 26, 1962. Application for reissue Dec. 15, 1976, Ser. No. 750,656

Int. Cl.² E01H *1/04*

U.S. Cl. 15—83 **12 Claims**



1. The combination with a sweeping machine having a frame *including an implement housing with a pair of end walls* a pair of *pinstable* support members, means for mounting said support members on said frame *closely adjacent said housing end walls,* and a tubular member rotatably mounted between said support members for rotation about the longitudinal axis of the tubular member, of:

a drive mechanism for rotating said tubular member, said drive mechanism including:

a source of *fluid* power in a form capable of being transmitted by conduit means,

a motor fixedly attached to a first of said support members, said motor having an output shaft and being capable of utilizing power from said source to rotate said output shaft, said motor being located substantially within the interior chamber defined by said tubular member,

drive means connected between said output shaft for driving said tubular member and supporting a first end of said tubular member,

fluid conduit means connected between said power source and said motor, and

control means to control the transmission of power through said conduit means to said motor.

Re. 29,958
PUNCH AND STRIPPER ASSEMBLY

Percy L. Cady, Darien Center, N.Y., assignor to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Original No. 4,031,787, dated Jun. 28, 1977, Ser. No. 709,338, Jul. 28, 1976. Application for reissue Dec. 14, 1977, Ser. No. 860,399

Int. Cl.² B26F *1/14*

U.S. Cl. 83—140 **19 Claims**

1. A punch and stripper assembly for use with a die on a workpiece beneath the ram of a punch press, comprising:

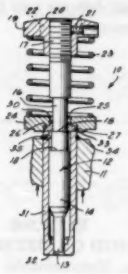
a. a punch having means at one end thereof for coacting with said die, an intermediate body portion, a shoulder facing away from said one end, and a threaded end portion at the opposite end;

b. an enlarged head adjustably carried on said threaded end portion for being engaged by the ram;

c. a compression spring surrounding said opposite end of said punch, and at one end engaging said head;

d. a washer surrounding said punch and engaging the opposite end of said spring;

e. a retainer acting between said punch shoulder and said washer, and held in engagement therewith by said spring; and



f. a stripper sleeve surrounding said body portion of said punch for transferring a reactive force from the workpiece to said retainer during a power stroke of the punch press to store energy in said spring.

Re. 29,959
SIMULTANEOUS PRODUCTION OF PLURALITY OF FILAMENT WINDING PACKAGES

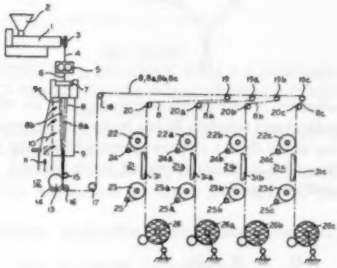
Heinz Schippers; Friedhelm Hensen, and Erich Lenk, all of Remscheid, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid-Lennep, Fed. Rep. of Germany

Original No. 3,719,442, dated Mar. 6, 1973, Ser. No. 91,850, Nov. 23, 1970. Application for reissue Apr. 29, 1974, Ser. No. 465,148

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1969, 1959034

Int. Cl.² D01D *5/16*

U.S. Cl. 425—66 **17 Claims**



17. An installation for the continuous production and winding of synthetic, thermoplastic polymer filaments which comprises a first part of said installation in which a plurality of said filaments are spun and solidified, said first part comprising extrusion and nozzle means for extruding a plurality of filaments of a molten, synthetic, thermoplastic polymer, and cooling means to solidify the extruded filaments;

a second part of said installation adjacent said first part, said second part comprising a plurality of side-by-side filament treatment means, each treatment means having filament-

winding means preceded by first godet means and second godet means forming a filament stretching means;

and filament guide means for conducting all of said filaments collectively from said first part to and along a common horizontal path above the plurality of said treatment means and then, as individual filaments or sub-groups of filaments, into separate paths of said individual filaments or said sub-groups thereof running from said horizontal path to the respective first godet means of said respective treatment means, and said filament guide means embodying guide members spatially positioned to provide substantially equal path lengths for the respective filaments between said first part and their respective first godet means.

Re. 29,960
METHOD OF SIZING PAPER

Emil D. Mazzarella, Mountainside; Leonard J. Wood, Jr., Berkeley Heights, and Walter Maliczyszyn, Somerville, all of N.J., assignors to National Starch and Chemical Corp., Bridgewater, N.J.

Original No. 4,040,900, dated Aug. 9, 1977, Ser. No. 683,405, May 5, 1976. Continuation-in-part of Ser. No. 535,443, Dec. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 471,230, May 20, 1974, abandoned. Application for reissue Feb. 27, 1978, Ser. No. 881,843

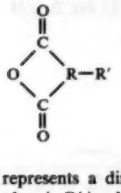
Int. Cl.[2] D21D *3/00*

U.S. Cl. 162—158 **7 Claims**

1. A method for sizing paper products comprising the steps of

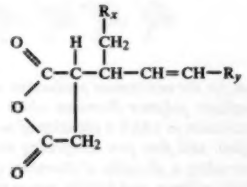
1. providing a paper stock system;
2. forming, in the absence of high shearing forces and under normal pressures, a sizing emulsion consisting essentially of:
   a. from 80 to 97 parts of substituted cyclic dicarboxylic acid anhydride corresponding to the formula

(A)

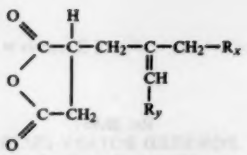


wherein R represents a dimethylene or trimethylene radical and wherein R′ is a hydrophobic group containing more than 5 carbon atoms which may be selected from the class consisting of alkyl, alkenyl, aralkyl, or aralkenyl groups;

(B)

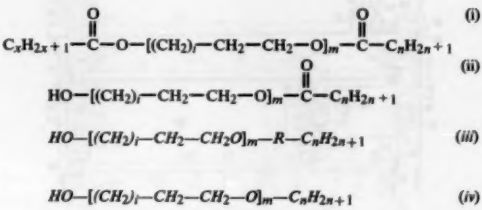


wherein R_x is an alkyl radical containing at least 4 carbon atoms and R_y is an alkyl radical containing at least 4 carbon atoms, and R_x and R_y are interchangeable;



wherein R_x is an alkyl radical containing at least 5 carbon atoms and R_y is an alkyl radical containing at least 5 carbon atoms and R_x and R_y are interchangeable;

   b. from 3 to 20 parts of a polyoxyalkylene alkyl or polyoxyalkylene alkyl-aryl ether or the corresponding mono- or diester selected from the group consisting of:



(i)

(ii)

(iii)

(iv)

wherein x and n are integers in the range of 8 to 20; R is an aryl radical; m is an integer in the range of 5 to 20; and i is 0 or 1; and

   c. *water;*
3. forming a web from the paper stock system [change c. water];
4. intimately dispersing said emulsion within the paper stock either before or after formation of said web but prior to passing said web through the drying stage of the paper making operation in an amount sufficient to provide a concentration of the substituted cyclic dicarboxylic acid anhydride of from 0.1 to 2.0%, based on dry fiber weight.

Re. 29,961
CURABLE POWDER COATING COMPOSITION COMPRISING A MIXTURE OF AN ALKOXYLATED POLYAMIDE-ALDEHYDE RESIN AND A POLYESTER RESIN

Cornelis van Dorp, Amersfoort; Nantko Kloos, Heino, and Frits Visser, Zwolle, all of Netherlands, assignors to Internationale Octrooi Maatschappij Octropa B.V., Netherlands

Original No. 3,624,232, dated Nov. 30, 1971, Ser. No. 5,941, Jan. 26, 1970. Continuation of Ser. No. 419,463, Nov. 27, 1973, abandoned. Application for reissue Jul. 7, 1975, Ser. No. 593,405

Claims priority, application Luxembourg, Jan. 28, 1969, 57855

Int. Cl.[2] B05D *3/02*

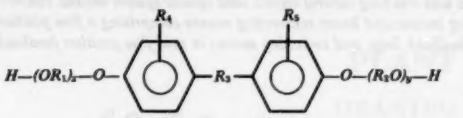
U.S. Cl. 427—195 **37 Claims**

18. A fusible pulverulent solid mixture prepared by bringing together alkoxylated polyamine-aldehyde resin and polyester resin having a softening point in the range of 60° C. to 130° C., and mixing said resins sufficiently at a temperature above the softening point thereof to form a homogeneous mixture while retaining said mixture in a thermosettable state, said mixture comprising 3 percent to 15 percent by weight of alkoxylated polyamine-aldehyde resin and 85 percent to 97 percent by weight of polyester resin having an acid number below 20 (A) of which the acid is a dibasic, aromatic carboxylic acid or a combination of said dibasic, aromatic carboxylic acid and up to 10 mole percent (based on the total dibasic aromatic carboxylic acid) of a polybasic aliphatic carboxylic acid or an at least tribasic aromatic carboxylic acid and (B) of which the alcohol is

(1) an alcohol component comprising

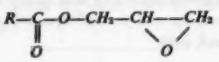
(a) from 0 to 100 mole % (based on the total alcohol compo-

nent of the polyester) of an alcohol having the general formula:



in which R_1 and R_2 represent alkylene groups having from 2 to 4 carbon atoms, R_3 represents a group selected from alkylidene groups having 3 or 4 carbon atoms, a cycloalkylidene group having 6 carbon atoms, a carbonyl group and a sulphone group, x and y are numerals each being at least one, the sums of x and y being not greater than 6, R_4 and R_5 represent a group selected from hydrogen atoms and alkyl radicals having from 1 to 6 carbon atoms;

(b) from 0 to 40 mole % (based on the total alcohol component of the polyester) of a glycidyl ester having the general formula:



in which R represents a group selected from straight and branched chain, saturated and unsaturated alkyl groups having from 4 to 20 carbon atoms, a substituted benzene nucleus and an unsubstituted benzene nucleus, and

(c) from 0 to 100 mole % (based on the total alcohol component of the polyester) of at least one dihydric, aliphatic alcohol, the sum of the alcohol components (a), (b), and (c) being 100 mole % (based on the total alcohol component of the polyester); or

(2) a combination of said alcohol component and up to 10 mole percent (based on the total alcohol component of the polyester) of aliphatic trihydric or polyhydric alcohol, said curable coating composition having a good powder stability.

Re. 29,962

COLLECTOR-UP SEMICONDUCTOR CIRCUIT STRUCTURE FOR BINARY LOGIC

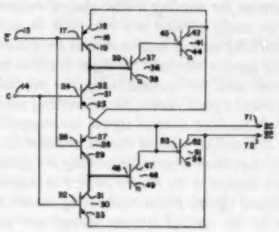
Lewis K. Russell, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

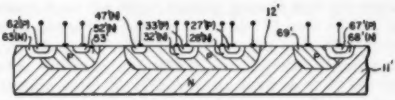
Original No. 3,947,865, dated Mar. 30, 1976, Ser. No. 512,919, Oct. 7, 1974. Application for reissue Mar. 28, 1978, Ser. No. 891,164

Int. Cl.[2] H01L *27/02;* **H03K** *19/34, 19/22*

U.S. Cl. 357—46 **6 Claims**

1. In a collector-up binary circuit structure of the type utilizing vertical active devices the structure comprising, a semiconductor body of one conductivity type having a planar surface, spaced first, second, third and fourth vertical transistors formed in said body including opposite conductivity base regions formed in said body extending to said surface, and one conductivity collector regions formed in the respective base regions extending to said surface, said body forming the emitter region for said transistors, fifth, sixth, seventh and eighth vertical transistors, [and] *said* fifth and sixth transistors formed in the base region of said second transistor including spaced one conductivity regions formed in said base region and extending to said surface, said second transistor base region forming the collectors of said fifth and sixth transistors, said spaced one conductivity regions forming the respective base regions of said fifth and sixth transistors, and opposite conductivity regions formed in the respective base regions of said fifth and sixth transistors extending to said surface to form the emitter regions of said fifth and sixth transistors, said seventh and eighth transistors formed in the base region of said fourth transistor including spaced one conductivity regions formed in said base region and extending to said surface, said base region forming the collectors of said seventh and eighth transistors, said spaced one conductivity regions forming the base regions of said seventh and eighth transistors, and opposite conductivity regions formed in the respective base regions of said seventh and eighth transistors and extending to said surface to form the emitter regions of said seventh and eighth transistors and interconnecting means for connecting said structure as a binary circuit having first and second voltage supply terminals, said interconnecting means including means for connecting the base regions of said fifth and seventh transistors to a binary input, connecting the base regions of said sixth and eighth transistors to the complement of said binary input, connecting the collector region of the said third transistor to the emitter





regions of said sixth and eighth transistors, connecting the collector region of said fourth transistor to the base region of said third transistor, connecting the base regions of said [first and third] *second and fourth* transistors and the collector regions of said fifth, sixth, seventh and eighth regions to the first terminal of a voltage supply and the semiconductor body to the second terminal of a voltage supply, connecting the [collector] *emitter* of said seventh transistor, the collector of said second transistor and the base of said first transistor to the binary output terminal, connecting the [collector] *emitter* of said fifth transistor and the collector of said first transistor to the binary complement output terminal, so that a binary circuit is provided.

Re. 29,963

SERVO SYSTEM FOR READING FROM A DISC-SHAPED RECORD CARRIER CONTAINING SIGNALS CODED IN OPTICAL FORM

Peter J. M. Janssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Original No. 3,854,015, dated Dec. 10, 1974, Ser. No. 335,934, Feb. 26, 1973. Application for reissue Dec. 10, 1976, Ser. No. 749,338

Claims priority, application Netherlands, Mar. 29, 1972, 7204205

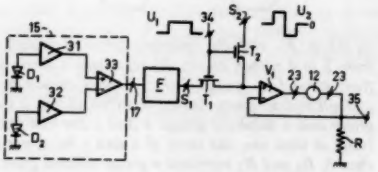
Int. Cl.[2] H04N *5/84;* **G11B** *7/00*

U.S. Cl. 358—128 **14 Claims**

1. Apparatus for reading a disc-shaped record carrier [of the type] wherein video and/or audio signals are recorded in [tangential] *substantially spiral* tracks, the apparatus being of the type wherein an optical system directs a light beam from a light source to the record carrier, and images the information from the record carrier on a radiation detector means for converting the optical image into an electrical signal, wherein position detector means for measuring the radial position of the optical system relative to a desired track provides position signals to a coarse position feedback loop for moving the optical system radially with respect to the record carrier and

further provides position signals to a fine position feedback loop, wherein the fine position feedback loop controls a beam deflection means pivotally mounted in the path of the light beam of the optical system for selectively angularly redirecting said beam with respect to said radiation detector means in response to said position signals from said fine position feedback loop, the improvement wherein switching means are provided in said fine position feedback loop for selectively opening said fine position feedback loop and for providing a preselected auxiliary control signal to said beam deflection means thereby angularly deflecting said beam by a predetermined amount and for subsequently reconnecting said fine position feedback loop.

13. Apparatus for reading a disc-shaped record carrier wherein video and/or audio signals are recorded in substantially spiral tracks, comprising optical system means for directing a light beam to the record carrier whereby the light beam is modulated by the record carrier, and for transforming the modulated light beam into an electrical signal, means for converting said electrical signal into a radial tracking control signal corresponding to the radial position of the optical system means relative to a desired track, coarse position control means for moving the optical system means radially with respect to the record carrier in response to said radial tracking control signal, beam redirecting means in the path of the light beam in the optical system means and connected to said signal converting means for selectively radially deflecting said optical system means with respect to said desired track in response to said tracking control signal, said optical system means, converting means and beam redirecting means comprising a fine position feedback loop, and switching means in said fine position feedback



loop for selectively disabling said fine position feedback loop and for providing a preselected auxiliary control signal to said beam redirecting means thereby deflecting said optical system means by a predetermined amount and for subsequently reactivating said fine position feedback loop.

PLANT PATENTS

GRANTED APRIL 10, 1979

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,402
CHRYSANTHEMUM

Nicolaas Middelburg, 's Gravenzande, Netherlands, assignor to Middelburg B.V., 's Gravenzande, Netherlands

Filed Aug. 26, 1977, Ser. No. 828,260
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum, substantially as described and pictured herein, characterized by its satiny golden blooms, vigorous growth, three month response and permanence.

4,403
DWARF PEACH TREE

Jack E. Christensen, San Dimas, and Arnold W. Ellis, Bakersfield, both of Calif., assignors to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Oct. 26, 1977, Ser. No. 845,844
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new variety of dwarf peach tree, substantially as illustrated and described, and having leaves with almost crenulate margins, showy pink blossoms, and freestone fruit, which has a skin of brilliant yellow overlaid with variegated strong to dark red coloration, the fruit, being especially characterized in the firm, juicy, fine-grained and melting character of its flesh, which retains these properties even somewhat beyond a fully-ripe state.

4,404
AFRICAN VIOLET

Frank Jørgensen, Haugevej 180, 5494 Stige, Denmark

Filed Nov. 17, 1977, Ser. No. 853,141
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new variety of African violet plant, substantially as herein shown and described, characterized by the compact growth, the filled, intense pink, upright flowers which rise upwardly in a central compact cluster above a circle of leaves having on the upper side a light central star-shaped spot and being supported by heavy peduncles increasing their diameter gradually towards the leaves.

4,405
WALNUT TREE

Harold I. Forde, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Apr. 21, 1978, Ser. No. 898,596
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—32 **1 Claim**

1. The new and distinct variety of walnut tree herein described and illustrated and characterized by its semi-upright growth, moderate vigor, heavy production and early harvest; said variety having its start of growth about the same time as Hartley and its harvest about 4 or 5 days before Hartley; said variety being further characterized by its production of pistillate flowers on nearly all shoots from terminal buds and on about 80 percent from shoots of axillary buds; said percent being substantially higher than other varieties currently in use and which have the same starting growth and nut maturity, and being about the same as U.C. 64-172; said variety being primarily characterized by its nuts, the ends of which are somewhat flattened and which are elliptical in longitudinal cross section with the ellipse being quite short in relation to diameter; said nuts having a shell light in color, medium in texture which is well filled and sealed.

4,406
PEACH TREE

Samuel J. Casella, Swedesboro, N.J., and Earl E. Slaybaugh, Towson, Md., assignors to Casella Bros. Sons Inc., Swedesboro, N.J.

Filed Jun. 2, 1978, Ser. No. 912,045
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree producing fruit of the yellow-fleshed, freestone type, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a tree size and shape similar to "M. A. Blake" but a little larger in size, a very vigorous tree habit with tough branches that are not brittle, a fruit having a more attractive color, appearance and of larger size than that of "M. A. Blake" although having a general resemblance thereto, hardiness to produce regular crops when spring frosts and cold reduces crops of other varieties, an earlier fruit ripening habit, averaging about ten days earlier than "M. A. Blake", and excellent resistance to canker and brown rot.

PATENTS

GRANTED APR. 10, 1979

ERRATA

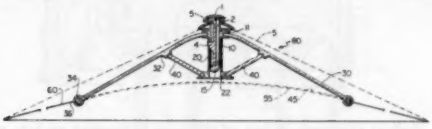
For CLASS	See PATENT NO.
405–155	4,148,193
280–154.5 R	4,148,373
414–732	4,148,399
414–750	4,148,400
414–590	4,148,401
414–676	4,148,402
414–002	4,148,403
414–259	4,148,404
414–207	4,148,405
414–458	4,148,406
273–026 A	4,148,555
422–007	4,148,605
422–021	4,148,606
264–048	4,148,734
546–074	4,148,794
546–189	4,148,795
546–199	4,148,796
546–344	4,148,797
562–534	4,148,822
428–242	4,148,894
260–326.12 R	4,148,922
426–402	4,148,933
568–855	4,149,004
250–396 R	4,149,055
340–768	4,149,112
058–023 R	4,149,146

PATENTS

GRANTED APRIL 10, 1979

GENERAL AND MECHANICAL

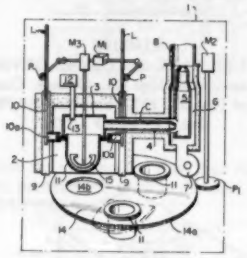
4,148,102
UMBRELLA-LIKE HAT
Chen Ying-Yu, Taichung, Taiwan, assignor to Hypromise Industrial Co., Ltd., Taiwan
Filed Apr. 24, 1978, Ser. No. 898,795
Int. Cl.[2] A42B *1/18, 1/20*
U.S. Cl. 2—177 **3 Claims**

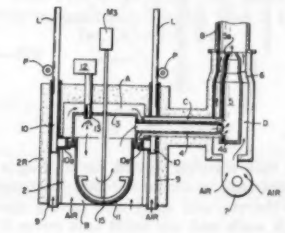


1. An umbrella-like hat for protection from sun or rain, comprising:
- a plurality of ribs;
- an upper central hub to which the ribs are pivotally connected;
- a plurality of steel threads each pivotally connected at one end to a rib;
- a lower central hub;
- a plurality of braces each pivotally connected at one end to the lower central hub and at the other end to an intermediate part of a rib;
- a flexible cover mounted on the ribs and the steel threads;
- an upper tubular member having a rectangular opening on its periphery, the upper tubular member being formed integrally with the upper central hub with a first bore provided therethrough;
- a lower tubular member having a rectangular opening on its periphery, the lower tubular member being formed integrally with the lower central hub with a second bore provided therethrough;
- a top member having a rectangular opening on its periphery, the top member being provided on the upper edge of the upper tubular member;
- a catch member having a button portion on its top end and a hook portion on its intermediate part, the catch member being inserted into the first bore with the button portion projected through the rectangular opening on the top member and the hook portion projected through the rectangular opening on the upper tubular member; and a plug consisting of a semi-cylindrical upper part and a conical lower part, the plug being attached to the lower part of the upper tubular member with the semi-cylindrical upper part thereof inserted into the lower part of the upper tubular member.

4,148,103
TOILET OF INCINERATING TYPE
Hiroshi Nishioka, Toyonaka, Japan, assignor to Volcano Kabushiki Kaisha, Osaka, Japan
Filed Oct. 21, 1977, Ser. No. 844,483
Claims priority, application Japan, Feb. 7, 1977, 52/12807
Int. Cl.[2] A47K *11/02*
U.S. Cl. 4—111.1 **13 Claims**

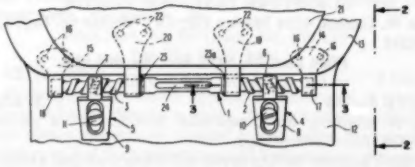
1. A toilet of the incineration type, said toilet comprising:
- a turntable mounted for rotation about an axis;
- a plurality of waste receiving pots removably mounted on said turntable at equal angular intervals about said axis;
- means for rotating said turntable about said axis to selectively align each of said pots at predetermined positions including a waste receiving position and an incineration position;
- an incinerator located to confront one of said pots aligned at said incineration position;
- means for removing said one pot from said turntable and tightly joining said one pot to said incinerator, such that the interiors of said one pot and said incinerator form an enclosed chamber;
- means for jetting combustion gas into said chamber to thereby incinerate waste contained in said one pot;
- stirring means extending into said chamber for stirring and kneading said waste during incinerating;





- means for discharging exhaust gas from said chamber during said incineration; and
- means for circulating cooling air around the exterior surfaces of said incinerator and said one pot during said incineration to thereby cool said exterior surfaces, and for then mixing said cooling air with said exhaust gas to thereby reduce the temperature of said exhaust gas.

4,148,104
TOILET SEAT HINGE
Milton Ginsburg, 1201 Sandringham Rd., Bala Cynwyd, Pa. 19004
Filed Feb. 17, 1978, Ser. No. 878,718
Int. Cl.[2] A47K *13/12*
U.S. Cl. 4—240 **11 Claims**



1. A hinge for affixing a toilet seat to a toilet bowl, said hinge comprising a bar, said bar being threaded along at least a portion of its length and said bar being rotatable about its longitudinal axis, means for attaching said bar to said seat, and a pair of hinge members adapted for threaded engagement with

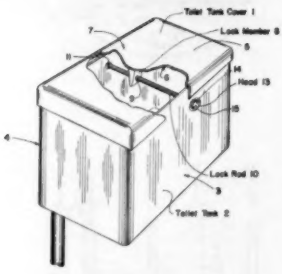
the threaded portion of said bar, wherein said hinge members further comprise means for affixing said hinge members to said toilet bowl, wherein said hinge members move along a portion of the length of said bar in response to rotational motion imparted to said bar, wherein each of said hinge members comprises a collar having a diameter of substantially the same size as the diameter of said bar, said collar comprising means for engagement with the threaded portion of said bar, and a bolt-receiving means, said bolt-receiving means being connected to said collar, each of said bolt-receiving means being respectively connected to said collar, and each of said bolt-receiving means having an aperture permitting the attachment of said collar to said toilet bowl.

4,148,105

TOILET TANK SECURING DEVICE

John P. Napolitano, 464 Ridge Rd., Orange, Conn. 06477

Filed Dec. 23, 1977, Ser. No. 863,790
Int. Cl.[2] E03D *1/00*
U.S. Cl. 4—353 **1 Claim**



1. A toilet tank securing device for locking a toilet tank cover to a toilet tank to secure the tank from tampering and theft of parts therein, said toilet tank having spaced parallel front and back walls and said toilet tank cover having a top with spaced parallel substantially flat inner and outer surfaces, said toilet tank securing device comprising

a lock member projecting substantially perpendicularly from the inner surface of the top of the toilet tank cover into the tank, said lock member having a bore formed therethrough; and

a lock rod passing through the bore through the lock member and bores formed through the front and back walls of the toilet tank in alignment with the bore through the lock member, said lock rod having an externally threaded part threadedly coupled in the bore through the front wall and a head having keyholes formed therein for accommodating a special key whereby said lock rod is rotatable by said key to insert the said lock rod through the bores of the tank and the lock member and to remove the said lock rod from said bores.

4,148,106

FURNITURE FASTENER SYSTEM

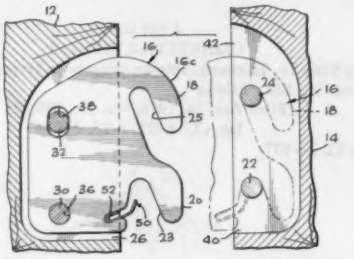
John W. Gallien, 4314 Marina City Dr., Marina del Rey, Calif. 90291

Filed Dec. 27, 1977, Ser. No. 864,516
Int. Cl.[2] A47C *19/00*; F16B *2/4*
U.S. Cl. 5—296 **11 Claims**

1. A coupling for connecting members of a primarily wooden frame, comprising:

a hook member having upper and lower ends and a coupling side, said coupling side having a hook and forming a recess thereunder that extends largely upwardly; and

a retainer comprising a member with a lower portion mounted on said hook member, said retainer extending primarily upwardly and into said recess, said retainer being resiliently biased toward a position in said recess and being resiliently deflectable from said position by a rod moving up into said recess, so that a transverse rod can



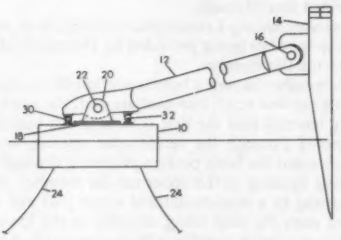
deflect the retainer out of the way in passing up into the recess and the retainer then springs back and prevents the rod from moving down and out of the recess.

4,148,107

MOORING BUOY

Robert D. Karl, Pacific Palisades, and William R. Reid, Jr., Northridge, both of Calif., assignors to Amtel, Inc, Providence, R.I.

Filed Feb. 28, 1977, Ser. No. 772,828
Int. Cl.[2] B63B *21/00*
U.S. Cl. 9—8 P **2 Claims**



1. A buoy for mooring vessels comprising:

a floating body having a top side,

yoke means having one end adapted for removable coupling to a ship,

bearing means mounted on said top side and coupled to a location near said yoke means other end to permit rotation of said yoke means about a horizontal axis, and

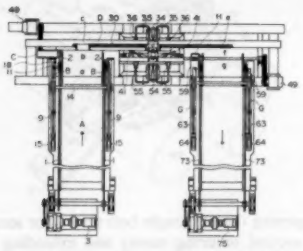
snubber means positioned between said yoke means and the top side of said floating body for limiting free pivotal action of said yoke means about said horizontal axis with respect to the top side of said body to a predetermined amount beyond which pivotal forces on said yoke means are also applied to said floating body by said snubber means, said snubber means comprises at least first and second spring means for applying pivotal forces to said yoke means to pivot about said horizontal axis in opposite directions when said yoke means compresses said first spring means or said second spring means respectively, with said free pivotal motion being limited to said predetermined amount when either of said spring means is fully compressed.

4,148,108

APPARATUS FOR POLISHING CATHODE PLATES FOR METAL ELECTROLYTIC REFINERY

Sachio Kamata, and Kunio Sekine, both of Akita, Japan, assignors to Dowa Mining Co., Ltd. and Akita Zinc Co. Ltd., both of Tokyo, Japan

Filed Sep. 8, 1976, Ser. No. 721,367
Claims priority, application Japan, Sep. 13, 1975, 50-110504
Int. Cl.[2] A46B 13/04
U.S. Cl. 15—77 4 Claims



1. Apparatus for polishing cathode plates for metal electrolytic refinery comprising:

conveyor means upon which cathode plates, which have had electro-depositions stripped off, are suspended in alignment and transferred through said apparatus;

hanger means for supporting said cathode plates;

elevator frame means;

transfer means by means of which the cathode plates suspended and transferred by the conveyor means are supplied individually to said hanger means, said hanger means further transferring the cathode plate for loading the plate onto said elevator frame means;

a stationary supporter mounted on said cathode plate;

said elevator frame means releasably receiving therein the cathode plate and covering said stationary supporter of the said cathode plate mounted thereon;

polishing means provided with a pair of polishing brushes of a length corresponding to the width of the cathode plate and facing against each other with a space therebetween, the cathode plate moving through said space with elevation of said elevator frame means; and

second transfer means by which the cathode plate after being polished by the polishing means is unloaded from the elevator frame means.

4,148,109

TRACK CHAIN BUSHING FACE CLEANER

Roy D. Morley, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

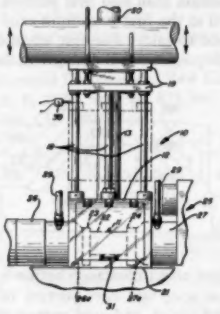
Filed Feb. 28, 1977, Ser. No. 773,044
Int. Cl.[2] A47L 5/14
U.S. Cl. 15—345 8 Claims

1. Apparatus for cleaning foreign particulate material from a surface of a workpiece having a first portion pressed onto a second portion, comprising:

movable press tooling for pressing said workpiece first portion onto said second portion;

mans including a portion of the press tooling for defining an effectively closed chamber arranged to have the workpiece surface exposed therein;

fluid supply means movable with said press tooling for delivering fluid under high pressure into said manifold chamber and substantially directly against said exposed workpiece surface within said manifold chamber to dislodge foreign particulate material from said surface; and



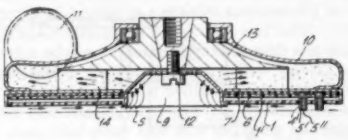
suction means for sucking the fluid and dislodged foreign particulate material entrained in the fluid outwardly from the manifold chamber.

4,148,110

ROTATING SCRAPING OR ABRADING TOOL

Asbjorn Moen, Tasen terrasse 19, Oslo 8, Norway

Filed Feb. 15, 1977, Ser. No. 768,882
Claims priority, application Norway, Mar. 2, 1976, 753000
Int. Cl.[2] A47L 9/04
U.S. Cl. 15—385 3 Claims



1. A rotary scraping or abrading tool including a disc having a multiplicity of guide means therein through which scraping elements are axially arranged, said scraping elements having outer active ends extending beyond the face of the disc facing the workpiece to be treated, a disc of elastic material, said scraping elements having inner ends bearing against said disc of elastic material, said guide means comprising bores arranged as coacting sets of holes provided in said disc and one adjacent parallel disc, said scraping elements comprising circular cylindrical tubular studs with a scraping end cross-cut and with an inner end thereof having a head, said head having a cross-section exceeding the cross-section of the remainder of the stud.

4,148,111

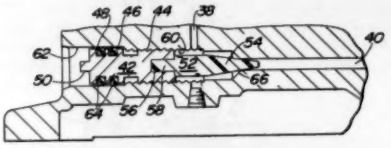
TEMPERATURE COMPENSATING HYDRAULIC DOOR CLOSER

Sideny Lieberman, Lancaster, Pa., assignor to Reading Door Closer Corp., Reamstown, Pa.

Filed Nov. 30, 1977, Ser. No. 856,133
Int. Cl.[2] E05F 3/04
U.S. Cl. 16—59 3 Claims

1. Hydraulic door closer apparatus comprising a housing having a cylinder therein, a piston disposed in said cylinder, linkage means operatively coupled to said piston for transmitting forces to and from said piston and between said piston and door, hydraulic circuit means in said housing for controlling movement of said piston in said cylinder, and hydraulic fluid control means comprising a valve seat and a valve member operatively associated with said valve seat and movably mounted with respect thereto, said valve member comprising a first portion of relatively dimensionally stable material and

having means thereon for adjustably coupling said valve member to said housing for movement with respect to said valve seat, and a second portion of material of greater cofficient of thermal expansion than said first portion, said second portion being coupled to the first portion in axial alignment therewith and juxtaposed to said valve seat when said valve member is operatively disposed so that changes in the temperature of said



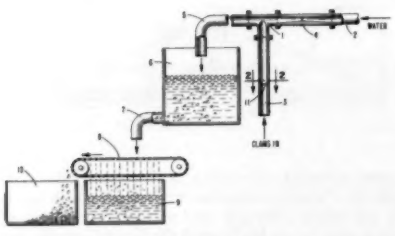
second position affect clearance between said second portion and the valve seat, said first portion of said valve member being made of metal, and said second portion of said valve member is made of plastic polymeric material, and means coupling said second portion of said valve member to said first portion, comprising an axially extending bore and an axially extending projection adapted to be received in said bore, and said projection being interference fitted within said bore.

4,148,112

HYDRAULIC EVISCERATION OF MOLLUSKS

John Marvin, Newcomb, Md., assignor to The American Original Corporation, Seaford, Del.

Filed Sep. 28, 1977, Ser. No. 837,183
Int. Cl.[2] A22C *29/04*
U.S. Cl. 17—53 **10 Claims**



1. A method for separating the belly of a clam from the remainder of the clam meat comprising the steps sequentially introducing one whole clam body at a time to a fluid shearing zone by providing a clam introduction conduit having a diameter such that said whole clam bodies can only pass through said conduit in a single file stream, continuously introducing a high velocity stream of fluid into said fluid shearing zone in such a manner that said whole clam bodies are aspirated into said fluid shearing zone by the vacuum created by said high velocity stream of fluid flowing past the point where said clam introduction conduit enters said fluid shearing zone, said high velocity stream of fluid creating forces sufficient to shear the bellies from said whole clam bodies, and separately recovering the bellies and the remainder of said clam meat.

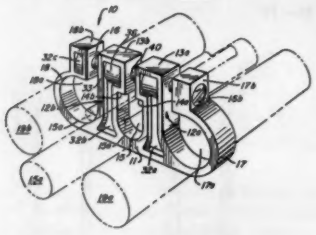
4,148,113

CLAMP FOR SECURING A PLURALITY OF ELONGATED ARTICLES

Harold A. Dvorachek, Iola, Kans., assignor to The Echlin Manufacturing Company, Branford, Conn.

Filed May 23, 1977, Ser. No. 799,595
Int. Cl.[2] B65D *63/00*
U.S. Cl. 24—16 R **8 Claims**

1. A clamp for retaining a plurality of elongated articles in spaced relation, comprising: a base member; post means extending from said base member to at least partially define a plurality of article-accommodating wells; first strap means mounted on said base member and defining with said post means a first of said article-accommodating wells; second strap means mounted on said base member and defining with said post means a second of said article-accommodating wells; a first securing means mounted on said post means, and second and third securing means mounted respectively on said first and second strap means, said first securing means including a



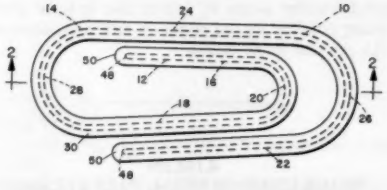
central opening therethrough; bolt means for securably engaging said second securing means and extending through said central opening of said first securing means to securably engage said third securing means, wherein said bolt means extends along an axis transverse of such elongated articles and laterally displaced substantially equally from said wells and said wells are all on the same side of said bolt means.

4,148,114

HIGH GRIP PAPER CLIP

John P. Wier, 2551 Worden St., San Diego, Calif. 92110

Filed Sep. 8, 1978, Ser. No. 940,498
Int. Cl.[2] B42F *1/02*; A44B *21/00*
U.S. Cl. 24—67.3 **8 Claims**



1. A paper clip having a first clamping loop and a second clamping loop, each clamping loop comprising an elongated member formed to define first and second opposed clamping planes, wherein the improvement comprises:

a resilient material secured around said elongated member along at least a portion of each of said clamping loops,

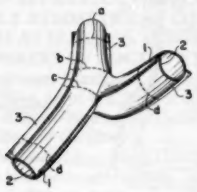
said resilient material having a cross-sectional configuration including a generally flat gripping face, said gripping face being parallel to the clamping plane of the respective clamping loop, said cross-sectional configuration further including ramp faces sloping away from said gripping face and toward said elongated member, and

said gripping faces on the first clamping loop being in planar opposition to the gripping face of the second clamping loop.

4,148,115
SELF-CLOSING FASTENER

Volkmar Kobelt, Bockeroth, Friedrichshoher Strasse 33, Königswinter, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 582,922, Jun. 2, 1975, Pat. No. 4,035,875. This application Nov. 12, 1976, Ser. No. 741,493
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 2550927
Int. Cl.² A44B 19/00
U.S. Cl. 24—201 R 1 Claim

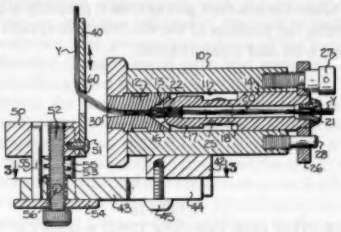


1. In a self-closing slideless fastener for joining or separating articles along a distance of indeterminate length, formed of two cooperating symmetrical fastener halves each including a resilient, longitudinally open tubular member; the fastener having a first position in which the fastener halves are in a fully interengaging condition along at least one part of the fastener length; the fastener having a second position in which the fastener halves are in a fully disengaged condition along at least one part of the fastener length; the fastener having a third position in which the fastener halves are in a partially interengaging condition along a boundary zone between a length portion in which the fastener is in its first position and a length portion in which the fastener is in its second position; the improvement wherein each said fastener half has a first part terminating in a first longitudinal edge portion and a second longitudinal edge portion; each said fastener half having a first stable state in which the fastener half is fully relaxed along at least one part of the fastener length; in said first stable state said first edge portion of said first part is spaced from and is internally of said second edge portion of said second part when viewed in a direction radially outwardly from the inside of the fastener half; said fastener being in said first position when said fastener halves are in said first stable state; each said fastener half further having a second stable state in which each fastener half is tensioned along at least one part of the fastener length, whereby potential energy is stored therein; in said second stable state said first edge portion of said first part is in engagement with and and is externally of said second edge portion of said second part when viewed in a direction radially outwardly from the inside of the fastener half; in said second stable state said first part of each said fastener half being urged by its own resiliency radially inwardly towards the said first stable state and is prevented to move thereinto by the resisting force of the second part of the respective fastener half; said fastener being in said second position when said fastener halves are in said second stable state; each said fastener half further having an unstable state in which said first edge portion of said first fastener half is in engagement with said second edge portion of said second fastener half and extends around said second edge portion of said first fastener half; in said unstable state further said first edge portion of said second fastner half is in engagement with said second edge portion of said first fastener half and extends around said second edge portion of said second fastener half; said fastener being in said third position when said fastener halves are in said unstable state; in said unstable state the potential energy stored in said second stable state being released whereby the fastener halves change over from their respective unstable state into their first stable state and longitudinally adjacent length portions of the fastener halves change over from their respective second stable state into their unstable state effecting a self-propagation of said boundary zone.

4,148,116
YARN TEXTURING AIR JET BAFFLE

Samuel T. Price, Kennett Square, Pa., assignor to Enterprise Machine and Development Corporation, New Castle, Del.

Filed Feb. 6, 1978, Ser. No. 875,396
Int. Cl.² D02G 1/16
U.S. Cl. 28—254 13 Claims

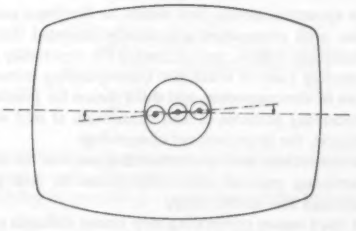


1. In a yarn texturing air jet of the type including an elongate housing having a central bore therethrough, an entrance end for passage of yarn into said air jet, an exit orifice for passage of yarn and air from said air jet, and means for directing pressurized air into the central bore of said housing to contact the yarn and pass outwardly through the exit end of said air jet to impart crimps, curls and loops to the filaments as the yarn passes through said air jet, the combination therewith of a baffle positioned adjacent said exit orifice of said air jet, means for supporting said baffle in a position substantially perpendicular to and spaced from said exit orifice, said baffle including a relatively thin edge out of axial alignment with said exit orifice and against which the yarn is drawn after leaving said exit orifice of said air jet, and said baffle also including a flat outer face on the side remote from said exit orifice with the yarn traveling along said outer face after engaging said edge.

4,148,117
ELECTRON BUN OPTICAL ADJUSTMENT APPARATUS AND METHOD

Pieter Bracke, Aichwald; Dieter Forker, Esslingen-Mettingen, and Dieter Kropsch, Köngen, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 4, 1977, Ser. No. 765,702
Int. Cl.² H01J 9/18, 9/42
U.S. Cl. 29—25.16 23 Claims



1. A method of aligning the electron gun system of a multicathode-ray tube, such as in a color television picture tube, with respect to the phosphor dots on the screen-plate thereof, in which the electron gun system which includes a plurality of guns, as well as the picture tube, prior to the assembly, are separated from one another and positioned for sealing and in which the electron gun system is supported and is capable of

being rotated about its longitudinal centerline axis, and is provided with position marks which are utilized for defining the relative position between the picture tube and the electron gun system prior to the sealing thereof, comprising the steps of:

providing optically effective position marks on the electron gun system;

illuminating and traversing said marks by one or more light sources;

measuring the light impinging upon said marks with the aid of one or more receivers opposite to said light source by deriving an indication of a maximum value of light intensity when the electron gun system is properly aligned; and

correcting the position of the electron gun system in accordance with said measurement.

4,148,118

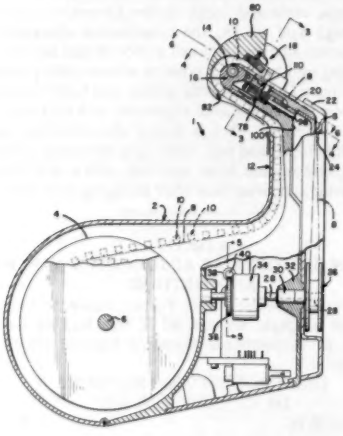
APPARATUS FOR CONNECTING PAIRS OF WIRES

James E. Fleischhacker, Winston-Salem, N.C.; Lincoln E. Roberts, Dunedin, Fla., and Albert D. Willette, Pfafftown, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 17, 1978, Ser. No. 887,699

Int. Cl.[2] B23Q *7/00*; H01R *43/00*

U.S. Cl. 29—33 K **1 Claim**



1. In apparatus having first means for feeding a carrier strip together with connectors sequentially mounted thereon to a wire insertion station, second means for repeatedly trimming and inserting pairs of wires into corresponding wire-receiving portions of the connector, and third means for positioning the wire-receiving portions of said connectors at said wire insertion station, the improvement comprising:

said connectors having a projecting portion for each wire-receiving portion removably joined to and projecting through said carrier strip,

said third means comprising stop means shiftable repeatedly into and out of the feed path of each said projecting portion,

said first means continuously applying tension on said carrier strip tending to advance the carrier strip and each projecting portion in turn against said stop means whereby the wire-receiving portions of said connectors are repeatedly advanced and positioned against said stop means at said wire insertion station.

4,148,119

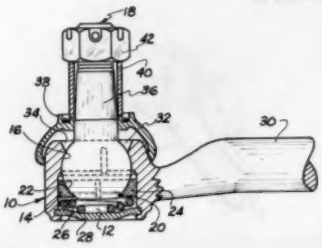
METHOD OF FABRICATING FLEXIBLE JOINTS

Victor R. McEowen, 379 Pittsfield Dr., Worthington, Ohio 43085

Continuation-in-part of Ser. No. 663,273, Mar. 3, 1976, Pat. No. 4,064,007. This application May 5, 1977, Ser. No. 793,930

Int. Cl.[2] B21D *53/10*

U.S. Cl. 29—149.5 B **2 Claims**



1. The method of making pivot joints comprising, in combination, forging a workpiece to form a cup-shaped housing portion including a cavity provided with an inner wall, having a bearing wall portion that includes a surface layer of decarbonized metal resulting from said forging; machining said bearing wall portion to remove said layer of decarbonized metal and form a finished bearing surface for pivotally supporting a ball stud; heading a carbon steel blank to form a ball stud comprising a spherical outer surface including lubricating grooves integrally formed during the heading operation; machining said spherical surface; heat treating said ball stud to case harden said spherical outer surface; surface finishing said ball stud to remove surface film said spherical outer surface; and mounting said spherical outer surface of said ball stud on said bearing surface of said housing.

4,148,120

METHOD OF MANUFACTURING A CATALYST FOR CATALYTIC PURIFICATION OF EXHAUST GASES

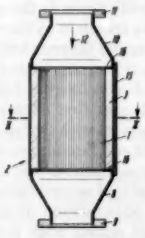
Johann Siebels, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Division of Ser. No. 573,143, Apr. 30, 1975, Pat. No. 4,070,158. This application Sep. 28, 1977, Ser. No. 837,389

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1974, 2434102

Int. Cl.[2] B23P *15/00*; F01N *3/15*

U.S. Cl. 29—157 R **1 Claim**



1. A method of manufacturing a catalytic unit for the catalytic purification of exhaust gases from an internal combustion engine, comprising the steps of:

covering with an elastic intermediate layer an outer circumferential surface of a monolithic carrier body provided with a catalytic agent;

arranging the covered body on a pre-rolled rectangular piece of sheet metal;

wrapping said rectangular piece of sheet metal around the covered body and pulling the ends of the piece together in a jig or stretching device so as to exert a radial pressure on the surface of said carrier body in the range of 20 to 80 N/cm^2; and

fastening the overlapping ends of said piece of sheet metal together.

4,148,121

METHOD AND APPARATUS FOR MANUFACTURING ROTATIONALLY SYMMETRICAL CONSTRUCTIONAL PARTS SUCH AS NOZZLES AND COMBINATION CHAMBERS OF ROCKET ENGINES

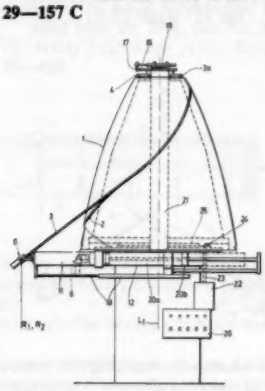
Karl Butter, Ottobrunn; Manfred Lechner, Munich, and Kurt Stich, Unterhaching, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Fed. Rep. of Germany

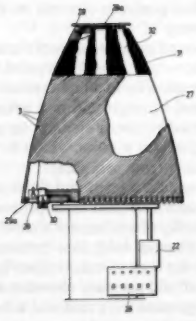
Continuation-in-part of Ser. No. 717,693, Aug. 25, 1976, abandoned, which is a continuation of Ser. No. 580,141, May 23, 1975, abandoned. This application Jan. 26, 1978, Ser. No. 872,432

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1974, 2428277

Int. Cl.[2] B23P *15/26*

U.S. Cl. 29—157 C **16 Claims**





1. A method of manufacturing rotationally symmetrical construction parts, such as nozzles and combustion chambers of rocket engines, having walls formed of elongated elements, such as wires or tubes, wound spirally about the axis of symmetry of the constructional part and connected to each other, said method comprising the steps of clamping one end of each element; bending each element to shape by bending it into contact with at least one bending guide which conforms to the predetermined three-dimensional geometry of the constructional part to be manufactured; during such bending, continuously controlling the adjustment parameters of the element, about three mutually intersecting axes in conformity with such predetermined three-dimensional geometry of the constructional part to be manufactured; removing each bent element from the bending guide; assembling the bent elements in juxtaposition on an assembly core having an external contour identical with the internal contour of the finished constructional part; clamping the opposite ends of the thus assembled juxtaposed elements against movement; restraining the bent elements in conforming engagement with the assembled core; progressively securing the juxtaposed elements to each other, in correspondence with progressive release of the restraint, to form the finished constructional part; and removing the finished constructional part from the assembly core.

7. Apparatus for manufacturing rotationally symmetrical constructional parts, such as nozzles and combustion chambers of rocket engines, having walls formed of elongated elements, such as wires or tubes, wound spirally about the axis of symmetry of the constructional part and connected to each other, said apparatus comprising, in combination, a bending device having at least one bending guide which conforms to the predetermined three-dimensional geometry of the constructional part to be manufactured; holding means operable to clamp one end of each element to said bending device for bending of the element to shape by bending it into contact with said bending guide; a clamping and adjusting device operatively associated with said bending device and operable to clamp the other end of each element to continuously control the adjustment parameters of the element, during bending of the element, about three mutually intersecting axes in conformity which such predetermined three-dimensional geometry of the constructional part to be manufactured; an assembly core having an external contour identical with the internal contour of the finished constructional part, arranged to have the bent elements assembled in juxtaposition thereon; and clamping means operatively associated with said assembly core and operable to clamp the opposite ends of the assembled juxtaposed elements against movement.

4,148,122

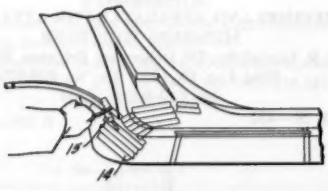
METHOD FOR REPAIRING VEHICLE BODIES

James T. Phillips, and Henry J. Kandl, both of 18831 Dixie Hwy., Homewood, Ill.

Filed Nov. 14, 1977, Ser. No. 850,957

Int. Cl.[2] B23P *7/00*

U.S. Cl. 29—401 E **6 Claims**



1. A method for repairing holes and rust areas in automobile and truck bodies comprising the steps of:

(1) identifying or providing a cavity behind the hole or rust area,

(2) filling said cavity with a moldable plastic material which will harden as a closed cell foam and provide a support base behind the hole or rust area,

(3) removing any hardened plastic support material on the surface of the body which does not conform to a desired body surface contour,

(4) applying a plastic filler to the area, the plastic filler being selected from the class consisting of a polyester resin and

filler mixed with a catalyst or an epoxy resin and filler mixed with a catalyst, and

(5) grinding the surface of the plastic filler to a feathered edge at the surface of the metal surface.

4,148,123

METHOD AND DEVICE FOR PRODUCING A SPRING MANOMETER MEASURING SYSTEM AS WELL AS A TUBE SPRING MANOMETER

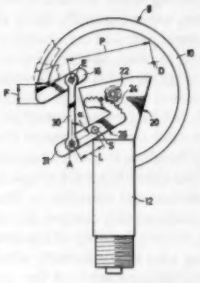
Kurt Neubeck, Miltenberg, and Hermann Julien, Klingenberg, both of Fed. Rep. of Germany, assignors to Alexander Wiegand GmbH & Co. Armaturen- und Manometerfabrik, Klingenberg, Fed. Rep. of Germany

Filed Nov. 25, 1977, Ser. No. 854,645

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1976, 2654270; Nov. 30, 1976, 2654279; Sep. 29, 1977, 2743785

Int. Cl.[2] G01F *1/38*

U.S. Cl. 29—407 **13 Claims**



1. A method for producing a spring manometer measuring system consisting of an indicator, a spring serving as a deviation detector and a tie rod connecting the indicator to the spring, a bearing defining an end point being produced on the spring for one end of said tie rod and a second bearing defining a pivot point for the other end of said tie rod being produced on the indicator and the tie rod articulating with both bearings, the spring being subjected to a specific reference pressure while the deflection of said spring is being measured, the deflection of the spring being measured before the bearings are produced for the tie rod and the geometric locations at which the bearing on the spring and the second bearing are produced being determined from the measured deflection on the basis of experimentally ascertained or calculated associations.

4,148,124

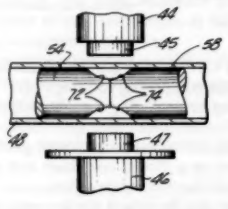
METHOD AND APPARATUS FOR ATTACHING MEMBERS TOGETHER

Dennis R. Goniwicha, 736 Robertson, Brighton, Mich. 48116

Filed Aug. 19, 1977, Ser. No. 825,973

Int. Cl.[2] B23P *11/00*

U.S. Cl. 29—432 **10 Claims**



1. A machine for attaching a portion of a first member to a thin walled second member, said first member portion having a predetermined cross-sectional shape and adpated to be attached at a predetermined position to said second member, said machine comprising;

means for supporting one side of said second member around the outer periphery of an area corresponding to the predetermined shape of the first member portion at said predetermined position;

means for driving said portion of said first member through the other side of said second member at said predetermined position whereby a plug of substantially said predetermined shape is punched from said second member of said predetermined shape and whereby said portion of said first member is frictionally engaged in said hole in said second member; and

means for clamping said second member against movement, wherein said clamping means further comprises a pair of jaws, means for moving said jaws towards and away from each other, and means for positioning said second member between said jaws whereby said jaws clampingly engage said second member when said jaws are moved together.

4,148,125

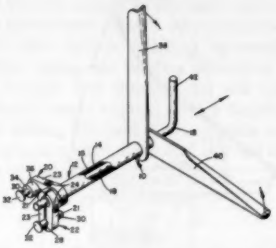
PROCESS OF AND DEVICE FOR SEATING A RING TYPE SEAL IN A GROOVE

Paul E. Hanser, Moline, Ill., assignor to HWH Corporation, Rock Island, Ill.

Filed Feb. 3, 1978, Ser. No. 874,899

Int. Cl.[2] B23P *11/02*

U.S. Cl. 29—451 **21 Claims**



1. A process of selectively reducing the transverse area circumscribed by the outer periphery of a generally symmetrical resilient ring type seal to permit its placement in a groove formed in an interior surface having a circumference which is less than the periphery of said seal, said process comprising the steps of

a. positioning a first pressure element in engagement with the outer periphery of said seal,

b. positioning a second pressure element in engagement with the inner periphery of said seal at a point which is radially offset in one direction from a line extending from the axial center of said seal through said first pressure element,

c. positioning a third pressure element in engagement with said inner periphery at a point which is radially offset in the other direction from said line,

d. rotatably shifting said second and third pressure elements transversely relative to said first pressure element in a direction outwardly of said center to fold a portion of said seal inwardly around said first pressure element and thereby reduce the area circumscribed by said seal, and

e. displacing one of said pressure elements axially relative to and out of engagement with said seal whereby said folded portion is permitted to unfold in response to said resiliency of said seal.

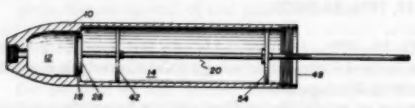
5. A device for selectively reducing the transverse area circumscribed by the outer periphery of a generally symmetrical resiient ring type seal to permit its placement in a recess formed in an interior surface having a circumference which is less than the periphery of said seal, said device being characterized by

a. a first pressure element engagable with the outer periphery of said seal,
b. a second pressure element engagable with the inner periphery of said seal at a point which is radially offset in one direction from a line extending from the axial center of said seal through said first pressure element,
c. a third pressure element engagable with said inner periphery at a point which is radially offset in the other direction from said line,
d. means for rotatably shifting said second and third pressure elements transversely relative to said first pressure element in a direction outwardly of said center to fold a portion of said seal inwardly around said first pressure element and thereby reduced the area circumscribed by said seal, and
e. means for displacing one of said pressure elements axially relative to and out of engagement with said seal whereby said folded portion is permitted to unfold in response to said resiliency of said seal.

4,148,126
TOOL AND METHOD FOR ASSEMBLING THREADED BURSTER RETAINER IN A PROJECTILE

Bruce W. Jezek, and Glen L. McClung, both of Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 31, 1978, Ser. No. 892,347
Int. Cl.[2] B23Q *3/00*; B23P *19/04*; B25B *13/58, 13/02*
U.S. Cl. 29—464 **6 Claims**



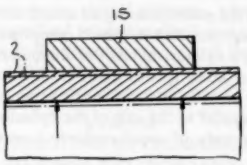
1. A tool for assembling an externally threaded burster retainer member in a binary chambered projectile housing which comprises:
a tubular torque bar having a forward end and a knurled rear end;
socket means fixedly disposed in said knurled rear end;
a circularly shaped assembly head axially aligned and fixedly attached to said forward end of said tubular bar, said assembly head having tab means peripherally protruding therefrom and adapted to slidably engage a grooved axial counterbore of said burster retainer member;
a first alignment means axially attached to said tubular torque bar and proximately disposed adjacent to said assembly head for guiding said assembly head and said burster retainer member through a rear open end of said projectile housing and aiding the manual threading of said burster retainer member to said housing;
a bushing flange means fixedly disposed on said tubular torque bar intermediate said first alignment wheel means and said socket means; and
a second alignment wheel means in combination with said first alignment wheel for operatively axially aligning said externally threaded burster retainer in said binary chambered projectile housing while applying powered torque force through said socket means to said tubular torque bar.

6. A method for assemblying an externally threaded burster retainer member in a binary chambered projectile housing comprising:
loading said burster retainer member on an assembly head supported on a forward end of a tubular torque bar;
inserting said assembly head with said burster retainer member thereon and first alignment wheel means into an open rear end of said projectile housing until said burster retainer member abuts a threaded forward chamber section of said binary chambered projectile housing;
rotating said tubular torque bar manually until said externally threaded burster member initially engages said threaded forward chamber section of said projectile housing;
slipping a second alignment wheel over a knurled end of said tubular torque bar;
pushing said second alignment wheel along said tubular torque bar through said open rear end of said projectile housing until said tubular torque bar is aligned fore and aft;
inserting a pneumatic nutrunner connecting coupling into a socket fixedly contained in said knurled tubular torque bar;
rotating said tubular torque bar with said pneumatic nutrunner until a given torque has been applied through said assembly head to said burster retainer member.

4,148,127
METHOD OF APPLYING A BOND-TYPE CRACK ARRESTOR TO A PIPE SECTION OF A PIPELINE

Francis S. Somerville, Calgary, Canada, assignor to Northern Border Pipeline Company, Kansas City, Mo.

Filed Oct. 19, 1976, Ser. No. 733,882
Claims priority, application Canada, Oct. 20, 1975, 238126
Int. Cl.[2] B21D *39/00*; B23P *11/02*
U.S. Cl. 29—523 **9 Claims**

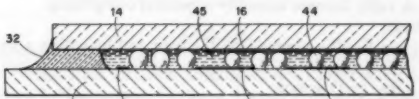


4. A method of applying a band-type crack arrestor to a pipe section of a gas pipeline comprising:
(a) placing said arrestor over the outer diameter of said pipe section;
(b) applying radial force to the inner diameter of said pipe section to expand said pipe section approximately 1½% in diameter to engage said arrestor in a substantially stress free tight fit while said arrestor is in the position it is to occupy along the pipe length.

4,148,128
LIQUID CRYSTAL DISPLAY DEVICE AND METHOD OF FABRICATION

Bernard Feldman, P.O. Box 549, Goleta, Calif. 93017, assignor to Feldman, Bernard, Goleta, Calif.

Division of Ser. No. 176,633, Aug. 31, 1971, Pat. No. 4,050,786.
This application Aug. 15, 1977, Ser. No. 824,283
Int. Cl.[2] H01S *4/00*
U.S. Cl. 29—592 R **7 Claims**



1. A method of fabricating a device for containing a liquid crystal material between isolated electrodes, including the steps of:
selecting a first substrate having electrically conducting portions on a first surface thereof;
applying a controlled thickness of a removable substance to said first substrate over said electrically conducting portions;

applying a conductive material over the applied removable substance to cover conductive portions of said first surface, said conductive material having spacers thereon which extend to contact said first surface; and

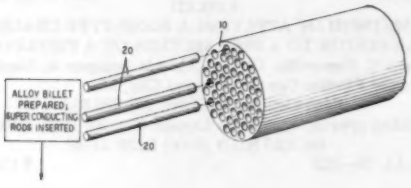
removing said removable substance from between said conductive material and first surface.

4,148,129

ALUMINUM-STABILIZED MULTIFILAMENTARY SUPERCONDUCTOR AND METHOD OF ITS MANUFACTURE

Morris S. Young, Murray Hill, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Nov. 1, 1976, Ser. No. 737,868
Int. Cl.² H01V *11/00*
U.S. Cl. 29—599 **12 Claims**



1. A method for manufacturing an aluminum-stabilized multifilamentary superconductor, which comprises:

(a) preparing a cylindrical billet of aluminum alloy having a plurality of holes spaced apart from one another in an essentially circular and symmetric array extending therethrough parallel to the axis of the cylinder;

(b) inserting rods of superconductive material into said holes;

(c) extruding said billet such that it is elongated in the direction of its axis;

(d) enclosing said extruded billet in a tube consisting essentially of aluminum not less than 99.999% pure;

(e) further enclosing said enclosed extruded billet in a metallic sheath of a metal substantially harder than the aluminum of the tube;

(f) working the assembly thus produced to a desired final cross sectional size not more than half its size prior to said working; and

(g) removing the metallic sheath from the outside of the assembly.

4,148,130

CABLE HARNESS ASSEMBLY APPARATUS

Larry R. Stauffer, Camp Hill; William J. Stape, Lewisberry, and Charles W. Donnelly, Sr., Camp Hill, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 6, 1977, Ser. No. 858,033
Int. Cl.² H01R *43/04*
U.S. Cl. 29—566.3 **5 Claims**

1. A cable harness assembly apparatus comprising:

a base;

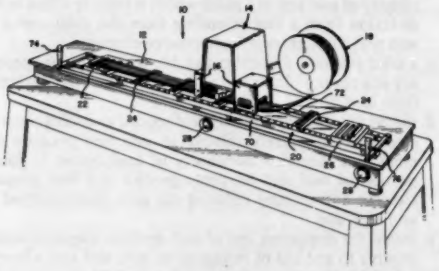
a press fixedly mounted on the base and including a vertically actuated ram carrying a conductor insertion tool on a free end thereof;

an index frame including at least one elongated rail member;

a plurality of connector carrying fixtures detachably secured to said index frame in parallel spaced alignment extending transverse to said at least one rail member;

means to move said index frame beneath the press; and

means to feed multi-conductor flat cable beneath said ram in the direction of movement of said index frame, said feed means including means to align the conductors of the cable with said insertion tool, whereby terminal carrying connectors loaded in said fixtures are sequentially terminated to said cable as said fixtures are indexed under the press in a first direction and covers subsequently placed on



the terminated connectors are secured to said connectors during indexing in the opposite direction.

4,148,131

METHOD FOR MANUFACTURING A SOLID ELECTROLYTIC CAPACITOR

Atsushi Nishino, Neyagawa; Hayashi Hayakawa, Kadoma, and Akihiko Yoshida, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 689,661, May 24, 1976, abandoned. This application Nov. 28, 1977, Ser. No. 855,200
Claims priority, application Japan, N .. 27, 1975, 50-143137; Mar. 19, 1976, 51-30175
Int. Cl.² H01G *9/05*
U.S. Cl. 29—570 **3 Claims**

1. A method for manufacturing a solid electrolytic capacitor comprising the steps of:

forming an anodically oxidized coating by anodic oxidation on a surface of an anode body made of a sintered porous body of a valve action metal selected from the group consisting of tantalum, aluminum, and niobium,

filling manganese dioxide in the pores of said sintered body by thermal decomposition of an aqueous solution of manganese nitrate,

dipping said anode body in a thermally decomposing, manganese oxide-forming solution of a $Mn(NO_3)_2$—$Mn(OH)_2$—NH_4NO_3—H_2O system having a viscosity of not less than 500 cp to deposit said solution on the outer surface of said sintered body,

thermally decomposing said solution to form a large amount of a fine and uniform manganese oxide layer, and

forming a cathode layer on said manganese oxide layer.

4,148,132

METHOD OF FABRICATING A TWO-PHASE CHARGE COUPLED DEVICE

Robert W. Bower, Manhattan Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 527,680, Nov. 27, 1974, Pat. No. 3,967,306, which is a continuation-in-part of Ser. No. 384,601, Aug. 1, 1973, abandoned. This application Feb. 9, 1976, Ser. No. 656,485
Int. Cl.² H01L *21/26*
U.S. Cl. 29—571 **6 Claims**

1. A method of fabricating a two-phase charge coupled device of high component density, comprising:

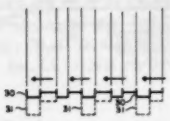
(a) providing a first mask having laterally spaced component forming areas that are substantially equal in lateral width and spacing to a predetermined minimum line width;

(b) forming on a surface of a semiconductor substrate at least in part by means of said first mask on array of thick insulating areas separated from each other laterally by thinner insulating regions, with said thick insulating areas having corresponding lateral width and spacing substantially equal to said predetermined line width;

(c) providing a second mask having laterally spaced component forming areas that are substantially equal in lateral width and spacing to said predetermined minimum line width;

(d) disposing said second mask over said insulating array with its component forming areas laterally displaced from said thick insulating areas by a distance such that a portion of said component forming area overlies said thick insulating areas and the remaining portion overlies said thinner insulating regions;

(e) forming on said insulating array by means of said second mask a first set of laterally spaced gate electrodes each of which covers a portion of said thick insulating areas and the remaining portion covers the adjacent portion of said



thinner insulating regions, the remaining portions of said thick insulating areas and said thinner insulating regions being devoid of said gate electrodes;

(f) coating with an insulating layer said first set of gate electrodes and the portions of said thinner insulating regions that are devoid of said gate electrodes;

(g) removing the portions of said thick insulating areas that are devoid of said gate electrodes at least to a depth substantially below the surface of said insulating layer coating the portions of said thinner insulating regions that are devoid of said gate electrodes; and

(h) depositing a second set of gate electrodes over said insulating layer referred to in clause (f) and interleaved with said first set of gate electrodes so as to overlie at least the interelectrode spaces therebetween.

4,148,133

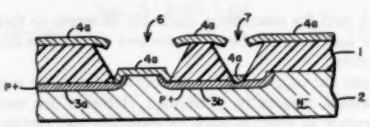
POLYSILICON MASK FOR ETCHING THICK INSULATOR

Leroy J. Kochel, Fridley; Harvey W. Kalweit, Minneapolis; Arthur D. Gonzales, Inver Grove Heights; Clyde L. Church, Apple Valley, all of Minn., and Paul H. Ou-Yang, Sunnyvale, Calif., assignors to Sperry Rand Corporation, New York, N.Y.

Filed May 8, 1978, Ser. No. 904,085

Int. Cl.[2] H01L *21/02*

U.S. Cl. 29—571 **6 Claims**



1. An improved method for etching a field insulator in a metal oxide semiconductor fabrication process, comprising:

providing a silicon substrate having an insulator formed over said substrate;

forming a layer of polycrystalline silicon over said field insulator;

etching a plurality of openings through said layer of polycrystalline silicon to form a mask for etching said field insulator;

etching said field insulator to expose portions of said substrate;

oxidizing said layer of polycrystalline silicon and the exposed portions of said substrate and said regions of second conductivity type;

stripping said oxidized layer of polycrystalline silicon from said field insulator and from said exposed portions of said substrate.

4,148,134

METHOD FOR FORMING A THERMOCOUPLE

Hugh J. Metz, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 12, 1977, Ser. No. 841,413

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—573 **1 Claim**

1. A method of fabricating an insulated junction thermocouple to improve the response rate thereof, comprising the steps of cutting a section out of one end of already-drawn sheathed thermocouple stock, removing the insulation from around the thermocouple wire ends of said section, placing a flared clamp over the end of said section, expanding the sheath of said section with a tube expander until it reaches the limit imposed by said clamp, removing said clamp and expander, welding said wire ends together to form the junction for said thermocouple, repacking the insulation about said junction, making an end closure weld for said thermocouple, and finally swaging the expanded sheath portion of said section about said junction to compact said repacked insulation and until said sheath is returned to its original diameter, whereby the compaction of said repacked insulation about said junction effects an improvement in the response rate of said thermocouple by at least 30% in a subsequent use thereof.

4,148,135

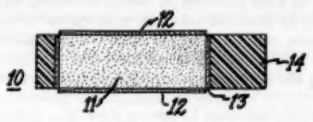
METHOD OF TREATING METAL OXIDE VARISTORS TO REDUCE POWER LOSS

Eugene C. Sakshaug, Lanesborough, Mass., and Howard F. Ellis, Stephentown, N.Y., assignors to General Electric Company

Filed Mar. 10, 1978, Ser. No. 885,294

Int. Cl.[2] H01B *1/08*; H01C *1/14*

U.S. Cl. 29—621 **12 Claims**



1. A method of treating zinc oxide varistors to reduce watts loss, said varistors being of the type consisting of a disc having a pair of metal electrodes on opposing disc surfaces and a collar of insulating material on the surface of the disc periphery comprising the steps of:

removing a layer of zinc oxide material from the periphery of the disc, and then applying the insulating collar.

4,148,136

METHOD OF MAKING A TUBULAR ELECTRICAL CONNECTOR, BLANK AND METHOD FOR MAKING

William T. Waddington, Fanwood; Harold F. Jenkins, Irvington, and Paul T. Filak, Roselle Park, all of N.J., assignors to Amerace Corporation, New York, N.Y.

Division of Ser. No. 677,406, Apr. 15, 1976, Pat. No. 4,040,711. This application May 20, 1977, Ser. No. 798,899

Int. Cl.[2] H01R *43/00*

U.S. Cl. 29—629 **6 Claims**

1. A method of making an electrical connector having first and second tubular contact members, each with a bottom wall extending longitudinally between opposite ends, a top wall and opposite side walls, the tubular contact members being spaced

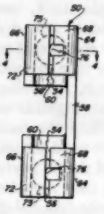
apart longitudinally to establish a gap therebetween and joined in a unitary structure through a strap bridging the gap, the strap being unitary with corresponding ones of said top and side walls, and a contact bar bridging the gap and extending into each tubular contact, said method comprising the steps of:

providing a flat sheet of metal having

a pair of elements extending in a given direction between opposite edges, parallel to one another and spaced in a transverse direction from one another, each element including

a top wall portion having opposite boundaries extending in said transverse direction and spaced from one another in said given direction;

first and second side wall portions contiguous with the top wall portion along said opposite boundaries of the top wall portion;



at least one bottom wall portion contiguous with a side wall portion along a transversely extending boundary opposite to the adjacent boundary between that side wall portion and the top wall portion; and

a strap portion extending transverse to said pair of elements and unitary therewith, said strap portion joining corresponding ones of said top wall portions and said side wall portions said pair of elements being transversely spaced along an entire extent thereof except where joined by said strap portion;

bending each element along said boundaries to bring the opposite edges into confrontation with one another;

welding at least portions of the confronting edges to one another to establish said first and second tubular contact members; said first and second contact members being joined only by said strap portion; and

Inserting the contact bar into the tubular contact members.

4,148,137

APPARATUS FOR USE IN MAKING ELECTRICAL INTERCONNECTIONS

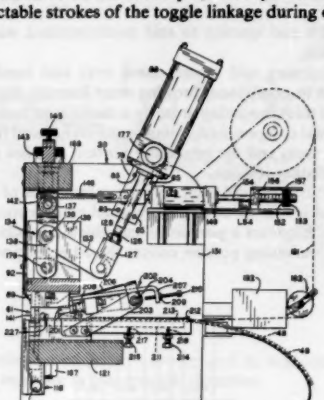
Alan L. Kindig, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 671,618, Mar. 29, 1976, Pat. No. 4,035,910, which is a continuation-in-part of Ser. No. 590,707, Jun. 26, 1975, Pat. No. 3,962,780. This application Apr. 15, 1977, Ser. No. 788,087

Int. Cl.[2] B23P *19/00, 17/02*

U.S. Cl. 29—732 **3 Claims**

1. Apparatus for forming differently configured crimped connections involving lead wires extending from a given stator assembly, said apparatus including a holder for supporting a stator core assembly; a frame supporting a crimping mechanism; eccentric means movable about a longitudinally extending center line; a toggle linkage having at least one part thereof extending from the eccentric means; said toggle linkage having selectable different effective strokes during stator crimping operations with each effective stroke being determined by the angular orientation of the eccentric means about the center line; and means for making a continuous adjustment of the angular position of the eccentric pin, thereby to permit continuous adjustment of toggle linkage travel within predetermined limits of travel; and means for automatically adjusting the angular position of the eccentric pin, thereby to establish different selectable strokes of the toggle linkage during operation



of the apparatus for establishing the differentialy configured crimped connections for the given stator.

4,148,138

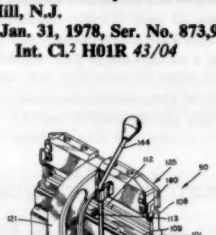
CONNECTOR ASSEMBLY TOOL

Edward W. Becker, Winder; Thomas A. E. Bender, Marietta; Peter F. Mahr, Roswell, and Edwyn H. Petree, Dunwoody, all of Ga., assignors to Western Electric Company, Incorporated, New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 31, 1978, Ser. No. 873,988

Int. Cl.[2] H01R *43/04*

U.S. Cl. 29—749 **13 Claims**



1. A tool for assembling stackable elements to form a connector and for assembling conductors to the elements, which comprises:

means for supporting the connector during its assembly in which adjacently positioned elements are secured together to form a stack of elements and conductors are assembled to elements;

means for applying forces to each successively stacked element positioned in the supporting means to secure it to an adjacent element previously positioned in the supporting means and for applying forces to conductors to assemble the conductors to the elements;

means for mounting said force-applying means for reciprocal movement which includes movement in one direction through first and then second incremental distances;

means for moving the means for applying forces through the first incremental distance to engage each successively stacked element and to engage conductors positioned in an element which is held in the supporting means and for

then moving said force-applying means through the second incremental distance to secure adjacent elements together and to secure conductors to an element; and

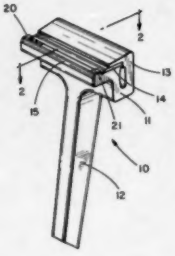
means responsive to the movement of the means for applying forces through the first incremental distance and to the initiation of the movement through the second incremental distance for spacing said force-applying means a predetermined distance from the supporting means, said spacing means capable of compensating for the number of elements which are held in the supporting means to cause the movement of said force-applying means through the second incremental distance to be effective to secure together adjacent elements and to secure conductors to an element.

4,148,139

HAND RAZOR ASSEMBLY

Dillis V. Allen, 1326 Algonquin Rd., Schaumburg, Ill. 60172

Filed May 24, 1976, Ser. No. 689,471
Int. Cl.[2] B26B *21/00*
U.S. Cl. 30—34.2 **3 Claims**



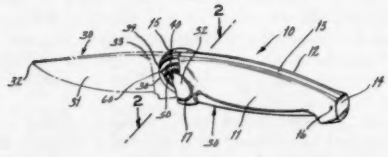
1. a hand razor assembly, comprising; frame means including a downwardly projecting handle, an upper blade holding portion, a normally stationary blade in said blade holding portion, said blade having a cutting edge with a plane extending through the blade and the cutting edge, guide means generally parallel to said cutting edge, said guide means being rigid under normal cutting pressure, said guide means having an elongated pointed portion having an edge parallel with said cutting edge and extending substantially above said plane of the blade whereby the skin rolls off the rigid pointed portion into engagement with the blade cutting edge.

4,148,140

FOLDING HUNTING KNIFE HAVING BALL LATCH

James B. Lile, Rte. 1, Russellville, Ark. 72801

Filed Mar. 20, 1978, Ser. No. 888,141
Int. Cl.[2] B26B *1/04*
U.S. Cl. 30—161 **6 Claims**



3. A compact locking mechanism for latching a folding knife blade to prevent rotation relative to the knife handle, comprising

a knife blade,

a knife handle,

a pivot bore in said knife blade,

one or more detent notch means formed in said pivot bore and extending radially outward,

a bushing means in said knife handle rotatably supporting said knife blade by its said pivot bore,

a latch passage extending radially through said bushing means,

movable latching means within said latch passage, and

means alternately to accommodate said movable latching means in a radially inward position and to press said movable latching means radially outward in said latch passage.

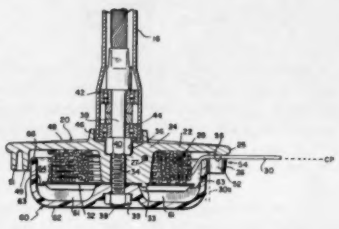
whereby when one said detent notch means is aligned with said latch passage, said movable latching means may so partially radially outward as to engage said detent notch means, thereby locking said knife blade from rotation relative to said knife handle.

4,148,141

LAWN TRIMMER CUTTER HEAD

Stephen J. Hoff, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.

Filed Feb. 17, 1978, Ser. No. 878,719
Int. Cl.[2] A01D *35/26*; A01G *3/06*
U.S. Cl. 30—276 **15 Claims**



1. A rotary cutter head for a lawn trimmer or the like comprising

a cup-shaped body having a top wall and a depending peripheral skirt, said skirt containing a series of circumferentially-spaced downward-open notches,

a bottom cup having a bottom wall spaced from the top wall of the body and having an upstanding side wall extending toward said top wall in inside lapping relation with said depending skirt,

the free edge of the side wall being disposed at a level adjacent the tops of the downward open notches,

means for storing reserve line between the cup-shaped body and bottom cup, with an end of such line extending from the stored line to and across the free edge of the bottom cup and thence outward through the top of a notch, the free edge of the side wall and the top of the notch confining the extended line for rotation in a predetermined plane.

4,148,142

CARPET CUTTER

Dennis J. Sullivan, and Carrie A. Sullivan, both of 305 S. Idaho Ave., Grangeville, Id. 83530

Filed Oct. 27, 1977, Ser. No. 845,951
Int. Cl.[2] B26B *29/00*
U.S. Cl. 30—293 **5 Claims**

1. A carpet cutting tool, comprising, in combination:

(A) a body member having a pair of spaced, opposed leg portions and a web connecting together the leg portions along corresponding edges thereof, the leg portions defining therebetween a sheet receiving slot, with one of the leg portions being provided with an opening therein;

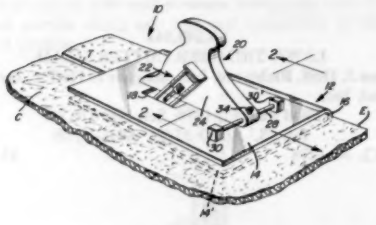
(B) handle means mounted on the body member for adjustable movement and pivotal movement, the adjustable movement being substantially perpendicular to the extent of the web of the body member and the pivotal movement being in a plane which is parallel to the extent of the web,

the handle means including a handle and mounting means for adjustably attaching the handle to the one of the leg portions of the body member, the mounting means comprising, in combination:

(1) a through hole provided in the handle;

(2) a longitudinally extending element slidably received in the hole provided in the handle and disposed extending longitudinally perpendicularly to the web of the body member; and

(3) bearing block means for rotatably supporting the element on the one of the leg portions of the body member and permitting the handle to swing relative to the one of



the leg portions, wherein the mounting means further includes a threaded bore provided in the handle and arranged communicating with the hole provided in the handle and a set screw threadedly engaged in the bore and releasably engaged with the element for retaining the handle in a desired position with respect to the web; and

(C) cutter means mounted on the handle means for being received in the opening provided in the one of the leg portions and engageable with a sheet disposed within the slot defined between the leg portions for trimming a strip from an edge of the sheet.

4,148,143

DENTAL TURBINE HANDPIECE

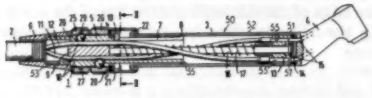
Ernst O. Fleer, Bensheim-Auerbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 22, 1977, Ser. No. 790,084

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1976, 2618158

Int. Cl.[2] A61C *1/12*

U.S. Cl. 32—27 **19 Claims**



1. A dental handpiece with a pressure-driven turbine comprising a base member being connected to a supply hose having a separate supply line for each pressure medium being supplied to the handpiece; a grip piece having a turbine head with at least one consumer point which includes the pressure-driven turbine, said turbine head having an end wall and having a separate duct for each pressure medium being supplied to the handpiece extending from said end wall to the respective consumer point, said grip piece having a sleeve portion extending from said end wall and surrounding all of said ducts; means detachably connecting the sleeve portion on the base member with relative rotation therebetween; a common connecting member having a passage for each of said ducts; a flexible conduit in communication with each supply line, each flexible conduit being received in a separate passageway extending parallel to the axis of the base member and extending into the sleeve portion to be in communication with the respective passage of the connecting member; and means for holding the connecting member with the passages thereof in fluid communication with the ducts of the turbine head, said means for holding including a threaded fastener for detachably securing the connecting member to the grip piece with the passages communicating with the ducts, and said base member having an axial passage to enable insertion of a suitable instrument for securing the threaded fastener after assembly of the sleeve portion on the base member so that upon assembly of the grip piece on the base member, the flexible conduits are in fluid communication with the ducts of the turbine head and allow relative rotation between the base member and grip piece.

4,148,144

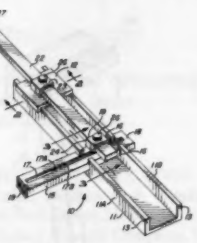
OVAL COMPASS

Walter E. Stiles, Phoenix, Ariz., assignor to Ron L. Norman, Phoenix, Ariz., a part interest

Filed May 4, 1978, Ser. No. 902,860

Int. Cl.[2] B43L *11/04*

U.S. Cl. 33—31 **1 Claim**



1. An oval compass comprising:

a base defining a first linear path extending along its length,

said base comprising a U-shaped configuration having a pair of legs,

a tubular guiding member defining a groove forming a second linear path of a predetermined length mounted on said base and extending laterally thereof,

said groove having stop means at points along each end thereof for preselecting the length of said second path,

said guiding member being movable laterally across said base in a controlled manner and said second path being shorter than the length of said first path,

said base being provided with a groove in which said guiding member is mounted for movement laterally of said base under predetermined conditions,

a drawing arm,

a pair of sliding members adapted to be connected to said drawing arm selectively at spaced points along said drawing arm,

one of said sliding members being constrained along the legs of said U-shaped configuration for sliding movement therewith and the other of said members being constrained to move along said second path crossing said first path so that in use as said sliding members reciprocate along their respective paths a point of said drawing arm describes an oval path,

said guiding member when in one position extending to one side of said base causing said part of said drawing arm to describe one half of an oval and when said other of said sliding members reaches an end of the path in said guiding member it actuates said guiding member to move said guiding member laterally to the other side of said base to provide a linear path on the other side of said base to cause said part of said drawing are to describe the second half of the oval,

said legs being grooved along their non-adjacent edges and said one of said sliding members being provided with

protrusions for fitting into said grooves of said legs to form a snug sliding arrangement therewith.

4,148,145

APPARATUS FOR MEASURING GAP WIDTH OF DUAL ROLLER TRACK

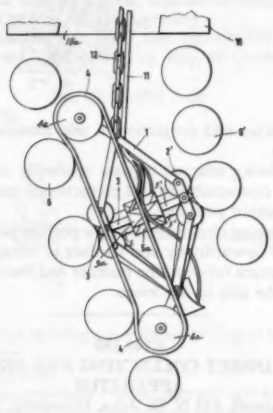
Karl Hölter, Witten; Hans Schrewe, Duisburg; Gerd Diederich, and Fritz P. Pleschiutschnigg, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf and Gustav Wiegard Maschinenfabrik, Witten, both cf, Fed. Rep. of Germany

Filed Aug. 25, 1977, Ser. No. 827,614

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1976, 2639240

Int. Cl.² G01B 5/14, 7/14

U.S. Cl. 33—143 L **7 Claims**



1. Apparatus for measuring the spacing between rollers of two tracks facing each other in pairs across a transport path, comprising:

a frame constructed for being folded and unfolded and having opposite extremities which move toward and away from each other as said frame is folded and unfolded and having two sets of centering rollers mounted on respective opposite extremities for respectively engaging two opposed rollers of the two tracks and positioning the frame into a measuring position;

feeler means mounted on the frame for engaging the two opposed rollers of the two tracks when the frame is in the measuring position;

means for indicating the position of the feeler means in representation of the spacing between the two rollers of the two tracks; and

means for providing for movement of the frame along the tracks.

4,148,146

INTERNAL THREAD GAGE

Robert W. Holland, 26639 Karen, Warren, Mich. 48081

Filed Mar. 1, 1978, Ser. No. 882,388

Int. Cl.² G01B 3/40

U.S. Cl. 33—199 R **10 Claims**

1. An internal thread gage comprising:

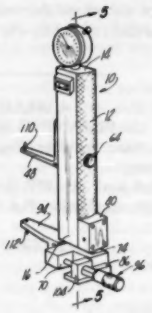
an elongated body;

lineal distance indicator means secured to said body, said indicator means having a movable member the movement of which provides a proportionate visual indication on the indicator means;

a first arm and means for longitudinally adjustably securing one end of said first arm to the body so that said first arm extends laterally outwardly from the body, said first arm having a first thread engaging member attached to its other end;

a connecting member longitudinally slidably disposed in said body and having one end operatively coupled with the indicator means movable member;

a second arm, said second arm having a second thread engaging member attached to one end;



means for laterally adjustably locking the other end of the second arm to the other end of the connecting member so that said second arm extends laterally outwardly from said body and so that the lateral distance between the thread engaging members can be adjustably preset; and

wherein said laterlly locking means further comprises micrometer means operatively connected between said connecting member and second arm for presetting the lateral distance between said thread engaging members.

4,148,147

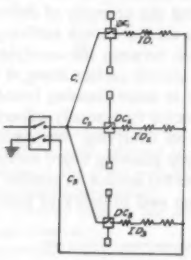
METHOD FOR CONTROLLING THE CURING OF FIELD-HARVESTED GRAINS WITH MINIMUM ENERGY CONSUMPTION

Sylvester L. Steffen, R.R. 3, New Hampton, Iowa 50659

Filed Oct. 28, 1977, Ser. No. 846,402

Int. Cl.² F26B 3/06

U.S. Cl. 34—27 **16 Claims**



1. A process for curing grain in a closed environment having means for removing moisture from the grain including means for forcibly introducing atmospheric air into the closed environment and means for dehumidifying said atmospheric air entering the closed environment, said process comprising the steps of:

placing uncured grain in the closed environment;

adding atmospheric air at one point of the closed environment, allowing the air to pass through the grain, and allowing the air to exhaust at another point in the closed environment;

maintaining the addition of atmospheric air at a first specified rate;

measuring the temperature of the atmospheric air at the point of entry, upstream of the dehumidifying means, and at the point of exhaust from the closed environment;

determining the temperature differential between the incoming air and exhaust air which is, at least in part, a function of the moisture content of a grain; and

progressively increasing or decreasing the output of the moisture-removal-means in response to progressively increased or decreased decreased output of moisture by the grain as determined by the sensed temperature differential.

4,148,148

PLANNING BOARD

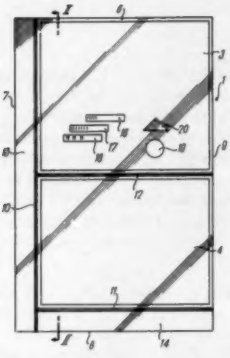
Harald Riehle, Anna-Schieber-Weg 18, 7300 Esslingen, Fed. Rep. of Germany

Filed Apr. 25, 1977, Ser. No. 790,626

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1976, 2618325

Int. Cl.[2] G09F 7/12

U.S. Cl. 40—594 **12 Claims**



1. A planning board comprising, in combination, a plurality of substantially planar planning board elements each having a front surface and a rear surface, said front surface formed by a soft, smooth foil having the property of detachably adhering by vacuum forces to a similar smooth surface pressed thereon by adherent interaction between the overlying surfaces, said rear surface having a smooth surface along at least a marginal portion to permit two or more planning board elements to be detachably interconnected in mutually adhering engagement by pressing together in overlying relationship said smooth marginal portion on one planning board element and a corresponding portion of the foil surface on another element to form a planning board from said plurality of planning board elements.

4,148,149

CUSHIONED GUN GRIP

Frank A. Pachmayr, Los Angeles, and Jack R. Farrar, Whittier, both of Calif., assignors to Pachmayr Gun Works, Inc., Los Angeles, Calif.

Filed Jan. 25, 1978, Ser. No. 872,329

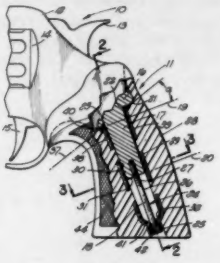
Int. Cl.[2] F41C 23/00

U.S. Cl. 42—71 P **29 Claims**

1. For use with a gun having a frame with a grip mounting projection extending from the frame along essentially a predetermined axis:

a grip detachably connectable to said frame and containing a recess for receiving said projection in a relation enabling movement of the grip relative to the frame essentially along said axis between a mounted position in which the projection extends into the recess and a separated position in which the projection is withdrawn from the recess;

said grip including a body of elastomeric material extending about said recess and having external gripping surfaces at its opposite sides for cushioned engagement with a user's hand, and a reinforcing structure embedded in and stiffer than said elastomeric material and having portions received at opposite sides of said recess at locations to axially overlap said projection in said mounted position of the grip;



said grip being adapted to pass upwardly therethrough a fastener connectable to said projection to retain the grip in said mounted position;

said reinforcing structure having a portion positioned to be clamped upwardly by said fastener to retain the reinforcing structure between the fastener and frame and thereby secure the grip to the frame.

4,148,150

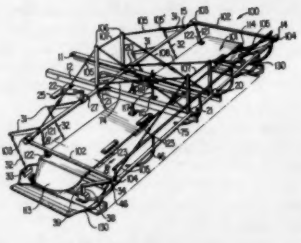
MOBILE INSECT COLLECTING AND DESTROYING APPARATUS

Robert C. Harrell, 616 N. St. John, Dyersburg, Tenn. 38024

Continuation-in-part of Ser. No. 741,694, Nov. 15, 1976, Pat. No. 4,094,088. This application Apr. 6, 1978, Ser. No. 893,934

Int. Cl.[2] A01M 1/20

U.S. Cl. 43—144 **14 Claims**



1. Tractor mountable apparatus for collecting and destroying insects from multiple rows of growing plants comprising a supporting frame including longitudinal support means mountable upon the front end of a tractor to project forward thereof, and a pair of elongated front and rear longitudinally spaced transverse support members carried by the longitudinal support means, a plurality of elongated open top incinerator pans, suspension means for suspending said incinerator pans from said pair of transverse support members at transversely spaced intervals so that said pans move adjacent the ground between the rows of plants as the apparatus moves along the plant rows, burner means in each of said metal pans for heating said pans and for burning insects falling into said pans, each of said pans having also separate vine agitator means mounted above and transversely across the pan for agitating the side branches of adjacent plants along which the pan moves, and for knocking insects into the pan, said suspension means including yieldable

independent suspension means for each of said pans permitting each of said pans to swing rearwardly and upwardly when encountering a stone or other low lying ground object, means for selectively raising and lowering all of said pans simultaneously, an elongated transverse canopy means for collecting insects and deflecting them downwardly into said pans, said canopy means extending across the entire width of said apparatus, and vertically adjustable canopy support means for mounting said canopy at selected heights above said pans so that said canopy brushes across the tops of the plants in the rows of plants transversed by said apparatus, said canopy having a top cover member, a downwardly extending rear deflector member, and an open front.

4,148,151

TOY FIGURINE

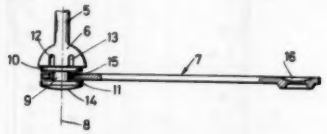
Hans R. Ulrich, Wuppertal, Fed. Rep. of Germany, assignor to Schleich & Co., Fed. Rep. of Germany

Filed May 31, 1977, Ser. No. 801,611

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625851

Int. Cl.[2] A63H *7/00*

U.S. Cl. 46—126 **10 Claims**



1. A device for moving a toy figure having at least two leg limbs comprising

two actuating rods

pivoting means pivotally connecting each actuating rod to at least one respective leg limb, each pivoting means including a shaft secured to said leg limb and secured to a lower section of said shaft a disc-shaped head portion enlarged with respect to said shaft to provide a ground support for maintaining said toy figure in a substantially self supported upright position.

4,148,152

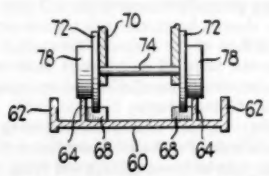
CONSTRUCTION TOY WITH REVERSIBLE TRACK HAVING SOUND PRODUCING MEANS

Gordon A. Barlow, Evanston, and Alex Imatt, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Division of Ser. No. 659,367, Feb. 19, 1976, abandoned. This application Sep. 30, 1976, Ser. No. 728,411

Int. Cl.[2] A63H *21/00, 18/02*

U.S. Cl. 46—216 **5 Claims**



1. A reversible track, and a toy vehicle having flanged wheels comprising, in combination:

at least one elongated reversible track section, said track section having a wide groove defined by a flat surface and a pair of vertical side flanges extending longitudinally along one side thereof and guide means extending longitudinally along the other side thereof, said guide means including a pair of spaced, longitudinally extending flanges mounted inwardly of the sides of the track section for engagement with the wheels of said vehicle to direct same therealong and a plurality of longitudinally spaced detents along said inwardly mounted flanges for engaging the flanges of the wheels of the toy vehicle for producing a repetitive audible sound as the toy vehicle moves along the track section; and

a toy vehicle including a pair of flanged wheels laterally spaced apart by an axle for engagement and support by the guide means on said other side of the track section and for free movement across said flat side of the track section.

5. A reversible track section for wheeled toy vehicles, comprising:

a plurality of elongated reversible track sections, each track section having a wide groove on one side thereof defined by a flat surface and a pair of vertical side flanges extending longitudinally along the sides thereof and guide means on the other side thereof, said guide means including a pair of generally vertically protruding longitudinally extending flanges mounted on a second flat surface inwardly of the sides of the track section for directing a wheeled vehicle therealong and detent means comprising a plurality of spaced tabs connected to said inwardly mounted flanges and each protruding upwardly in a plane generally normal to said second flat surface for engagement with the wheels of a toy vehicle for producing a rhythmic repeating, audible signal as the wheeled vehicle is moved along the guide means.

4,148,153

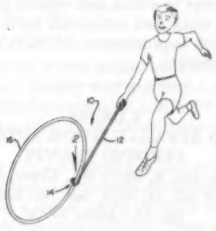
TRUNDLE LOOP AND METHOD OF DETACHABLY CONNECTING SAME TO A HOOP

James T. Phillips, Jr., 4336 W. 59th Pl., Los Angeles, Calif. 90043

Filed Feb. 27, 1978, Ser. No. 881,250

Int. Cl.[2] A63H *33/02*

U.S. Cl. 46—220 **7 Claims**



1. In a hoop propelling trundle having a handle and a loop at one end thereof of the type adapted to detachably capture a hoop therein, whereby the hoop may be propelled or arrested in its motion, said loop comprising:

(a) a resilient circular loop in the form of a helix having axially spaced free ends,

(b) said ends normally being also spaced circumferentially to prevent the hoop from passing therebetween,

(c) said ends adapted to be sprung axially further apart to provide a space disposed axially between the ends to permit passing the hoop therebetween and into the loop for capturing same therein,

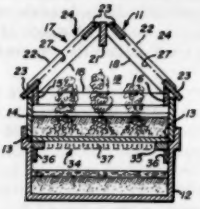
(d) the construction and arrangement being such that the hoop and loop may be assembled by abutting the hoop and loop ends at an angular relationship such that a hoop cross sectional diameter is substantially aligned with the direction between ends of the loop, and applying a force directed radially inwardly of the loop for cammingly spreading the ends in opposite axial directions of the loop and without increasing its diameter, permitting the hoop to pass therebetween,

(e) said handle being connected to the loop at the rear end thereof between said axially spaced free ends.

4,148,154
COMPOSITE HORTICULTURAL SYSTEM

James H. King, Los Altos Hills, Calif., assignor to Harry E. Aine, Palo Alto, Calif., a part interest

Filed Sep. 6, 1977, Ser. No. 830,436
Int. Cl.[2] A01K 1/00; A01G 9/02
U.S. Cl. 47—58 11 Claims

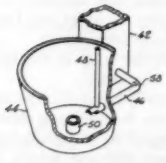


1. In a composite horticultural system:
first container means for containing a worm culture medium for growing worms and for converting manure to be placed therein to worm casting type top soil;
second container means for containing a plant growing medium including worm casting type top soil produced in said first container means for growing of plants therein;
environmental control means for affecting the temperature and growing conditions of plants planted within said top soil in said container means, said environmental control means being light transmissive for passage of sunlight therethrough to the plants;
first mounting means for mounting said second container means over said first container means; and
second mounting means for mounting said environmental control means over said second container means and to at least one of said first and second container means for support of said environmental control means from said container means to which said control means is mounted, whereby an integrated composite horticultural system is formed, which approximates the earth's ecosystem relative to horticulture.

4,148,155
SYSTEM AND APPARATUS FOR AUTOMATICALLY FEEDING PLANTS

Donavan J. Allen, Rte. 4, Berry Rd., Greer, S.C. 29651

Filed Jul. 29, 1977, Ser. No. 820,342
Int. Cl.[2] A01G 27/00
U.S. Cl. 47—59 5 Claims

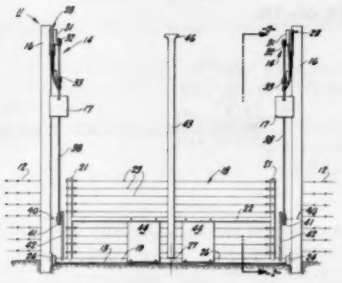


1. A hydroponic system for growing plants in a nutrient solution in an enert medium comprising:
an open top plant container for containing the inert medium and plant;
a reservoir for containing said nutrient solution;
feeder means for automatically maintaining a predetermined level of said nutrient solution in said container including a tube member connected adjacent one end to said reservoir having an open end at a remote end thereof for dispensing said solution;
means for carrying said tube member in said container with said open end disposed at a predetermined distance above the bottom thereof corresponding generally to said predetermined level;
valve means for selectively blocking flow in said tube member so as to prevent flow therethrough when said reservoir is being filled including at least a section of said tube member outside of said container consisting of flexible tubing bendable upon itself for effecting blockage of flow through said tubular member; and
air vent means communicating with said tube member allowing air to enter said reservoir in response to the level of said nutrient solution in said container falling below a portion of said open end of said tube member.

4,148,156
CATTLE RANCH GATE CONSTRUCTION

Elmont C. Lubmann, 4643 Fruitland Rd., Marysville, Calif. 95901

Filed Aug. 7, 1978, Ser. No. 931,483
Int. Cl.[2] E06B 11/00
U.S. Cl. 49—131 4 Claims



1. A cattle ranch gate construction for use on a roadway comprising:
a. a vertical pair of posts facing each other on opposite sides of the roadway;
b. a pair of beams each centrally mounted in a horizontal attitude on a respective one of said posts adjacent the upper end thereof, said beams being parallel to each other and to the direction of the roadway;
c. two pairs of upper pulleys, each of said pairs of upper pulleys being supported on the ends of a respective one of said beams in a predetermined plane parallel to the plane including said respective one of said beams;
d. two pairs of lower pulleys each of said pairs of said lower pulleys being mounted on a respective one of said posts and lying in the respective predetermined plane of the related one of said pairs of upper pulleys;
e. a gate frame transversely spanning the roadway, said gate frame being pivotally mounted on said pair of posts for movement about a horizontal axis transverse to and adjacent the surface of the roadway between a first upright position in the plane of said pair of posts and a second position substantially parallel to and in engagement with the surface of the roadway;
f. a pair of sheaves, each of said sheaves being mounted on the opposite ends of said gate frame below the respective pair of said pairs of lower pulleys and lying in the respective predetermined plane, the rotational axis of each of said sheaves being located well above the pivot axis of said gate frame to afford a substantial righting moment arm effective to urge said gate frame from said second position toward said first position when upward force is imposed on said sheave;
g. a pair of tension lines, each of said lines being trained around the bottom of a respective one of said sheaves, around the facing portions of a respective pair of lower pulleys and around the upper portions of a respective pair

of upper pulleys with the ends of each of said pair of tension lines depending from the respective pair of upper pulleys; and,

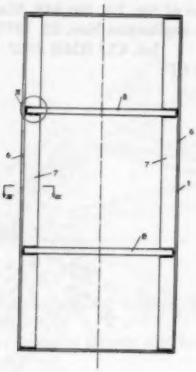
h. two pairs of counterweights, each of said pairs of counterweights being secured to the related depending ends of one of said pair of tension lines at a location well above the level of the roadway surface.

4,148,157

METAL CLAD DOOR

Paul Franc, 189 rue Duguesclin, Lyon 3, Rhone, France

Filed Nov. 15, 1976, Ser. No. 741,574
Int. Cl.[2] E06B 3/00
U.S. Cl. 49—501 **11 Claims**



1. A metal clad door comprising:

at least two metallic panel members;

an internal unitary metallic frame member mounted between said at least two metallic panel members, said unitary frame member being continuous for the entire peripheral length of said metal clad door, said internal unitary metallic frame member further comprising:

a body member having a cental wall portion perpendicular to said at least two metallic panel members; and

at least two wing portions perpendicular to said wall portion and parallel to said at least two metallic panel members, said central wall portion, and at least two wing portions being integral to define the cross sectional configuration of said body member;

means for reinforcing said body member, said reinforcing means mounted to said central wall portion of said body member and at least one of said two wing portions of said body member;

a resilient insulation member interposed said at least two metallic panel members and said unitary metallic frame member;

a wood edging member mounted to said unitary metallic frame member and surrounding the outer periphery of said at least two metallic panel members;

means for attaching said edging member to said unitary metallic frame member; and

means for mounting said at least two metallic panel members to said unitary metallic frame member.

4,148,158

LAWN MOWER BLADE GRINDER

John J. H. Hewitt, 99, Aldwych, London WC2B 4JY, England

Filed May 12, 1977, Ser. No. 796,139
Int. Cl.[2] B24B 5/36
U.S. Cl. 51—48 HE **2 Claims**

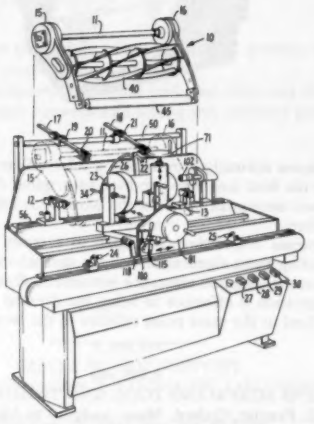
1. A device for grinding the blades of a lawn mower reel without disassembling the lawn mower blade reel from its supporting structure and which is capable of both single blade grinding and spin grinding of said reel comprising:

a. bar and clamp means connecting the device to a tie bar of the supporting structure and a pair of tailstocks adapted to engage pre-existing holes within said supporting structure;

b. grinding means assembly which is vertically and horizontally adjustable to accommodate lawn mower assemblies of varying sizes and which is slidably attached to a channel in said device adapted to traverse the entire longitudinal blade reel and being further radially adjustable to contact reels of variable radial dimensions;

c. adjustable stops set to predetermine the length of traverse of said grinding wheel;

d. direction reversing means including microswitch means attached to the grinding wheel assembly whereupon said grinding wheel assembly is caused to change directional paths each time said microswitch means contacts said adjustable stops;



e. pawl and ratchet wheel means attached to the grinding wheel assembly causing said grinding wheel assembly to advance radially between 0.001 and 0.004 inches each time said pawl and ratchet means contact one of said adjustable stops;

f. means attached to the housing of said grinding means for preventing rotation of said reel during single blade grinding comprising a finger guide which is adjustable so that the relief angle between each reel blade and the grinding wheel can be pre-selected and which is further removable during spin grinding; and

g. a spin grinding head attached to the shaft of said reel for spinning said reel in the same direction as the direction of the grinding wheel and which is characterized as being horizontally and vertically adjustable to accommodate lawn mower assemblies of varying sizes and which is capable of being disengaged from the shaft of said reel during single blade grinding.

4,148,159

GRINDING MACHINE

Edward G. Robillard, Cherry Valley, Mass., assignor to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Division of Ser. No. 718,900, Aug. 30, 1976, Pat. No. 4,059,927.
This application Sep. 19, 1977, Ser. No. 834,696
Int. Cl.[2] B24B 49/18
U.S. Cl. 51—165.88 **6 Claims**

1. A grinding machine for generating a surface of revolution on a workpiece, comprising

(a) a base,

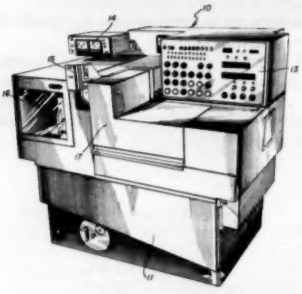
(b) a workhead for holding the workpiece and a wheelhead for holding an abrasive wheel mounted on the base for

relative movement transversely and longitudinally of the axis of the surface of revolution,

(c) feed means operative to produce the said relative transverse movement in response to the receipt of electrical pulses,

(d) a dresser carrying a diamond mounted on a portion of the machine not subject to transverse movement relative to the workhead,

(e) means generating a signal indicative of wear on the diamond,



(f) means normally introducing a selected number of pulses to the feed means to produce an original diamond clearance movement between the workpiece and the abrasive wheel,

(g) means converting the signal to a series of pulses and adding them algebraically to the said selected number, so that the diamond clearance movement after each dressing operation is effective to bring the dressed surface of the wheel to the same point relative to the workhead.

4,148,160

LENS SURFACING TOOL AND TOOL HOLDER

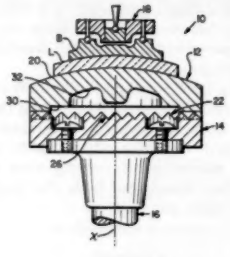
Louis J. Prunier, Oxford, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 5, 1977, Ser. No. 857,492

The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.

Int. Cl.² B24B *41/00*

U.S. Cl. 51—168 **4 Claims**



1. In a tool and tool holder system for lens surfacing apparatus wherein the tool has a mounting face and the holder has a tool supporting face adapted to manually releasably receive the tool mounting face, the improvement comprising:

a first multiplicity of juxtapositioned pyramidal protrusions extending over at least a portion of said mounting face of said tool;

a second multiplicity of juxtapositioned pyramidal protrusions extending over at least a portion of said supporting face of said tool holder;

said first and second protrusions on said portions of said mounting and supporting faces being of corresponding shapes and geometrical patterning for mating in interfitted relationships with each other when said faces of said tool and holder are manually brought together; and

means for preventing lateral slippage between said tool mounting face and tool supporting face when said protrusions are mated.

4,148,161

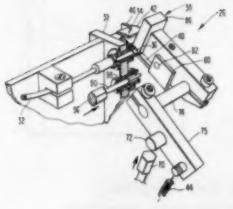
LOADING UNIT FOR AN AUTOMATIC BUR GRINDING MACHINE

William McCandless, Toledo; Robert F. Leu, Delta, both of Ohio; Ernest A. Kroder, Felton, Pa., and Charles J. Tomecek, Curtice, Ohio, assignors to Dentsply Research & Development Corp., Milford, Del.

Division of Ser. No. 793,204, May 2, 1977, Pat. No. 4,106,242, which is a division of Ser. No. 666,848, Mar. 15, 1976, Pat. No. 4,052,821. This application Nov. 22, 1977, Ser. No. 854,297

Int. Cl.² B24B *3/02*

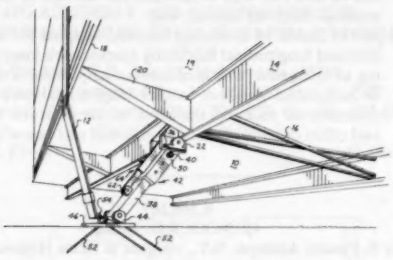
U.S. Cl. 51—215 CP **1 Claim**



1. A loading unit for a bur grinding machine adapted to receive from a supply thereof blank burs comprising shanks having heads on one end thereof requiring flutes to be ground therein to form cutting teeth therebetween, said unit comprising in combination a base plate adapted to be secured to a bur grinding machine, an inlet guide member on said base plate, another plate fixed at a right-angle to said base plate, said base plate having a first aperture therein to receive blank burs from a source, and a second aperture therein, a transfer member supported by said base plate and parallel thereto for movement within a substantially vertical plane and having a bur-receiving space therein which in one position of said member is aligned with said first aperture of said inlet guide member and in a second position thereof said member blocks passage of burs from said inlet guide member and disposes said bur-receiving space in axial alignment with said second aperture in said another plate and also with a bur-receiving collet when said loading unit is mounted upon said machine, plunger means mounted upon said another plate and having one end aligned with said bur-receiving space in said transfer member when in said second position thereof, means engageable with said transfer member and operable to move the same positively from said one position to said second position, said transfer member being provided with a blade mounted thereon for limited movement relative to said bur-receiving space and cooperating therewith to form a socket to receive and position a bur blank upon said transfer member, said blade having an outer end projecting beyond said transfer member, means normally engaging said blade to urge the same toward said space, and

means on said base plate engageable by said projecting outer end of said blade immediately prior to said transfer member reaching said one position and operable to move and hold said blade slightly spaced from said space to increase the cross-sectional size of said socket and thereby permit free movement of a bur blank into said bur-receiving space from said inlet guide member.

4,148,162
MOBILE HOME BLOCK AND TIE-DOWN
Donald E. Goodrich, 703 Johnson Dr., Kerrville, Tex. 78028
Filed May 22, 1978, Ser. No. 908,257
Int. Cl.[2] E04B *7/00*
U.S. Cl. 52—23 **8 Claims**

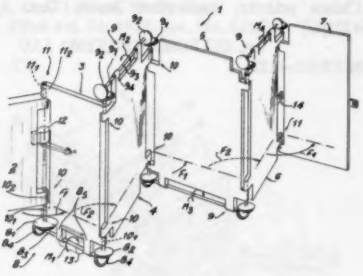


1. A block and tie-down unit for a mobile home having
   a. length and width,
   b. peripheral edges along its length, said length being more than its width, and
   c. at least two longitudinal beams,
   d. said beams spaced inward from said peripheral edges,
   e. said beams forming a major structural support members for said mobile home;

comprising in combination with the above:
   f. a gear plate attached to one of said beams,
   g. a beam ear attached to said beam spaced from said gear plate,
   h. an arm, one end of said arm between said beam ear and gear plate,
   j. a shaft extending through said beam ear and gear plate,
   k. said arm rigidly attached to said shaft,
   m. a gear on said shaft at said gear plate,
   n. toothed means on the gear plate for rotating said gear,
   o. means for attaching a crank to said toothed means,
   p. a base plate,
   q. said base plate having a pair of plate ears thereon,
   r. the other end of said arm between said plate ears and pivoted thereto,
   s. stake holes through said base plate,
   t. said stake holes adapted to receive stake pins therethrough to anchor said stake plate to the ground, and
   u. a strap clip attached to said base plate,
   v. said strap clip being means for attaching a strap which is adapted to extend over the mobile home.

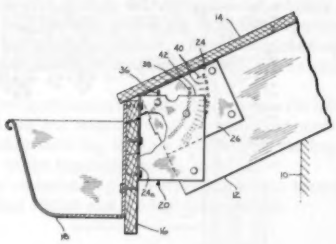
4,148,163
SYNCHRONIZING MECHANISM FOR THE UNFOLDING OF CARRIER ELEMENTS FOR SOLAR CELLS
Claude Chenin, Cannes-la-Bocca, and Jean-Claude A. Vermalle, Mandelieu, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed Jun. 10, 1977, Ser. No. 805,424
Claims priority, application France, Jun. 18, 1976, 76 18594
Int. Cl.[2] F16H *1/14, 1/20;* B64G *1/10*
U.S. Cl. 52—71 **10 Claims**

1. A synchronizing mechanism for the folding and unfolding of panel-like elements adapted to carry solar cells comprising:
   a plurality of carrier elements coupled together in bellows-like manner by means of hinge-joints having associated hinge-pins;
   a plurality of gear-train units forming a linkage operably connecting said elements for synchronous movement



relative to each other between a folded position and an unfolded position; and
   at least one motor for driving said gear-train unit to move said elements between said folded and unfolded positions.

4,148,164
FASCIA BOARD SUPPORT
Gerald A. Humphrey, Rte. 3, P.O. Box 380, Lake Geneva, Wis. 53147
Filed Oct. 17, 1977, Ser. No. 842,560
Int. Cl.[2] A63H *23/04*
U.S. Cl. 52—94 **10 Claims**

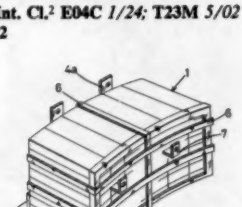


1. A support for affixing a fascia board to the end of a rafter supporting a roof comprising:
   a rectangular piece of sheet-like material bent at a single crease to form an L-shaped section normal to said crease, said support having a flange with a depending panel lying normal thereto, said flange being suitable for positioning adjacent the under side of the roof alongside the rafter and said panel being suitable for positioning on the side of the rafter and joinable thereto, said panel having a slit in the central portion thereof extending across said panel and terminating at said crease, said slit permitting said flange to be bent at the point of termination of said slit to provide a downwardly extending vertical part suitable for receiving the fascia board, the central portions of said panel being overlapped by the bending of said flange.

4,148,165
FIRE BRICK UNIT

Akira Watanabe, Okayama; Yukio Kusaka, and Shigeo Sasaki, both of Bizen, all of Japan, assignors to Kyushu Taikarenga Kabushiki Kaisha, Bizen, Japan

Filed Nov. 18, 1977, Ser. No. 852,969
Claims priority, application Japan, Dec. 3, 1976, 51-164201[U]
Int. Cl.[2] E04C 1/24; T23M 5/02
U.S. Cl. 52—122 5 Claims

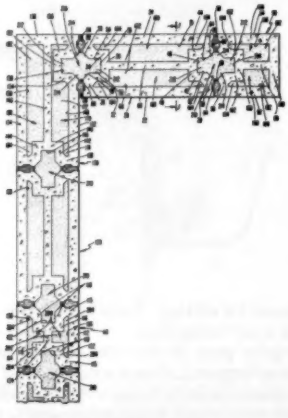


1. A fire brick unit comprising:
a plurality of stacked fire bricks, said bricks being stacked side by side in rows, one row on top of the other;
a single support means extending underneath each brick in the bottom now of said stacked fire bricks for supporting said stacked fire bricks thereon;
suspending means connected to said support means and on the outside of said stacked fire bricks for lifting and carrying said support means and said fire bricks thereon; and
binding means around said stacked fire bricks for binding said fire bricks together with said support means and said suspending means into a single unit.

4,148,166
INSULATED CONSTRUCTION BLOCK

Charles A. Toone, 4200 Lorcom La., Arlington, Va. 22207

Filed Mar. 3, 1978, Ser. No. 883,286
Int. Cl.[2] E04B 2/42; E04C 2/10
U.S. Cl. 52—309.12 16 Claims

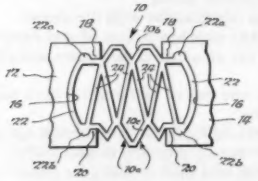


1. A construction block, comprising:
a pair of spaced vertical side walls providing an inner side wall and an outer side wall of the block;
a pair of end walls connected to opposite ends of said vertical side walls;
said side and end walls defining a hollow interior region within the block for receiving insulating material;
at least one of said end walls including an intermediate portion offset inwardly into said hollow interior region to provide a vertical recess on the exterior of said end wall for receiving insulating material;
a longitudinal web extending from said offset portion of said one end wall to the opposite end wall and spaced from said vertical side walls to divide said hollow interior region into longitudinal insulating spaces adjacent to said inner side wall and said outer side wall for receiving the insulating material;
each longitudinal insulating space extending along substantially the entire length of the block and being substantially uniform in thickness and including an extension of reduced thickness located between said offset portion of said one end wall and one of said side walls and overlapping said recess in said one end wall;
said recess having an enlarged portion adjacent to the exterior of said end wall to increase the amount of insulating material received therein; and
a pair of inserts of insulating material adapted for insertion into said longitudinal insulating spaces, each insert including an elongated portion of substantially uniform thickness to be located adjacent to said longitudinal web and an extension of reduced thickness to be received between said offset portion of said one end wall and one of said side walls.

4,148,167
CONCOURSE SEAL

Guy S. Puccio, Amherst, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.

Filed May 16, 1977, Ser. No. 797,074
The portion of the term of this patent subsequent to Nov. 30, 1993, has been disclaimed.
Int. Cl.[2] E01C 11/04, 11/02
U.S. Cl. 52—396 15 Claims



1. An expansion joint assembly having a pair of spaced-apart structural slab members defining a gap therebetween and a seal connected between said slab members for bridging said gap, each said slab member having in cross-section a generally C-shaped cavity with a preselected radius of curvature, each said cavity opening toward said gap defined between said slab members wherein each said cavity is defined between opposed projecting portions of said respective slab members spaced from each other a distance less than the maximum dimension within said cavity taken generally parallel to said opening, and said seal comprising
an elongated body including a mounting bead portion extending along each of its longitudinal edges with an intermediate section interposed between and formed integral with said mounting bead portions for spanning said gap wherein each of said mounting bead portions is received within said cavity of a respective slab member, each mounting bead having in cross-section an outer surface portion for matching engagement with said cavity with opposed portions of said mounting bead correspondingly abutting said opposed projecting portions of said slab member and tending to move away from one another within said cavity whereby relative lateral movement of said mounting bead with respect to said slab member is resisted, and the radius of curvature of said outer surface

of said mounting bead in an unstressed, disassembled form being less than said preselected radius of curvature of said cavity so that upon assembly of said mounting bead within said edge member cavity said outer surface of said mounting bead is affirmatively urged to assume the greater radius of curvature of said cavity by the abutment of said opposed portions of said mounting bead with said opposed projecting portions of said slab member resulting in said movement of said opposed portions of said mounting bead away from one another, and

said intermediate section comprising a plurality of crossbars intersecting at the opposite ends thereof and collapsing upon movement of said mounting beads towards one another during compression of said seal.

4,148,168

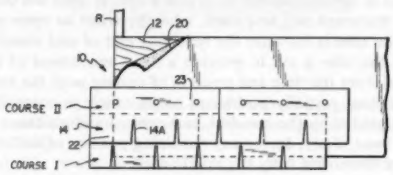
JIG ASSEMBLY AND METHOD FOR THE MANUFACTURE OF PREFABRICATED ROOFING PANELS

John N. Diamond, P.O. Box 93, Malvern, Pa. 19355

Continuation-in-part of Ser. No. 858,836, Dec. 8, 1977, abandoned. This application Dec. 29, 1977, Ser. No. 865,437

Int. Cl.[2] E04G *21/00*

U.S. Cl. 52—748 **3 Claims**



1. A jig assembly for use in the manufacturing of prefabricated roofing panels having a plurality of straightline shingle courses secured to a substrate in overlapping relationship between adjacent courses and with a predetermined distance of overlap between the bottom edges of a first course of shingles and the bottom edge of said substrate comprising:

(a) rectangular frame means having first and second planar surfaces and a central rectangular portion removed therefrom in the provision of a central access opening through said frame means, said access opening having its longitudinal edges disposed parallel to the first and second longitudinal edges of said frame means;

(b) first guide bar means disposed parallel to a first longitudinal edge of said rectangular frame means between said first longitudinal edge and said access opening on a first planar surface of said frame, said first guide bar means projecting outwardly from said first planar surface in a direction perpendicular thereto;

(c) second guide bar means disposed on said first planar surface parallel to a second longitudinal edge of said rectangular frame means on the opposite side of said access opening from said first guide bar means, said second guide bar means projecting outwardly from said first planar surface in a direction perpendicular thereto;

(d) a first indexing projection on a second surface of said frame means opposite from said first surface, said first indexing projection being in registry with said first longitudinal edge of said frame means said first indexing projection projecting outwardly from said second surface in a direction perpendicular thereto;

(e) a second indexing projection on said second surface in registry with said second longitudinal edge, said second indexing projection projecting outwardly from said second surface in a direction perpendicular thereto; and

(f) a third indexing projection affixed to said second indexing projection spaced inwardly of said frame means a predetermined distance from said second indexing projection and spaced from said second planar surface of said frame means by a predetermined distance.

4,148,169

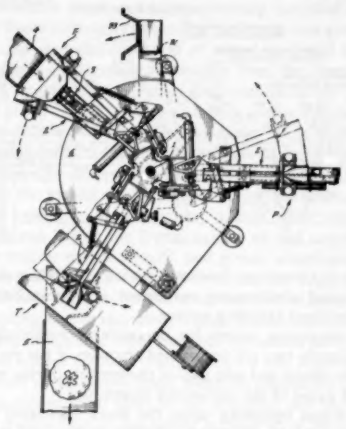
TURRET BAGGER

Donald R. Zike, Yakima, Wash., assignor to Pomona Service & Supply Co., Inc., Yakima, Wash.

Filed Jul. 14, 1977, Ser. No. 815,706

Int. Cl.[2] B65B *43/28*

U.S. Cl. 53—573 **10 Claims**



1. In an automatic bagger including

a bag-pickup station for supplying bags;

a bag-tying station spaced from the bag-pickup station for tying bags;

a bag-filling station located between the bag-pickup station and the bag-tying station for filling bags;

bag-holding and spreading means for picking up a bag at the bag-pickup station and for spreading the top opening of such picked-up bag;

unidirectional orbiting means carrying the bagholding and spreading means; and

drive means for shifting the unidirectional orbiting means, after a bag has been picked up, from the bag-pickup station to the bag-filling station, where such picked-up bag is filled, and then to the bag-tying station, where such filled bag is tied;

the improvement comprising steadying means for following a filled bag and disposed in steadying engagement therewith while such bag is being shifted from the bag-filling station to the bag-tying station, and

means for reciprocating said steadying means between the bag-filling station and the bag-tying station.

4,148,170

PRODUCT WRAPPING MACHINE AND METHOD

Rene J. Gaubert, 4219 Oakmore Rd., Oakland, Calif. 94602

Continuation-in-part of Ser. No. 654,597, Feb. 2, 1976, abandoned. This application Sep. 27, 1977, Ser. No. 837,284

Int. Cl.[2] B65B *11/08*

U.S. Cl. 53—466 **18 Claims**

1. A machine for wrapping predetermined weights of elongated product in package with sheets of wrapping material, said sheets having both a leading margin and a trailing margin, comprising:

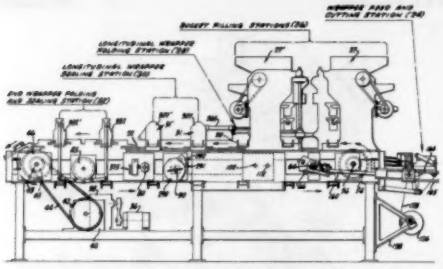
(a) a frame;

(b) endless conveying means carried by the frame and having an upper generally horizontal run, said conveying means including means forming elongated buckets extending laterally of the direction of movement of the convey-

ing means, the buckets being spaced apart in the direction of movement, upwardly faced and having means for retaining the leading margins of the sheets relative to the buckets;

(c) means for cyclically driving the conveying means with periods of pause between periods of advancing movement, said buckets move in tandem, one after the other, through the machine;

(d) means for positioning sheets of wrapping material succes-



sively over two buckets moving in tandem during each period of advancing movement, said sheets being held by the sheet retaining means;

(e) dispensing means for depositing substantially simultaneously two predetermined amounts of the product upon the sheets and into two of the buckets during each period of pause of the conveying means; and

(f) means operating upon the sheet associated with each bucket for performing wrapping, folding and sealing operations to complete the package.

4,148,171

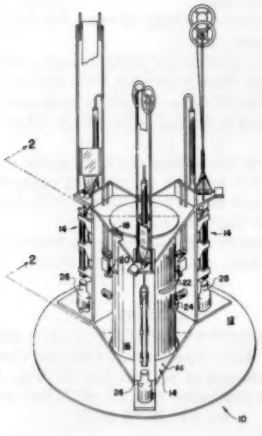
BANDING APPARATUS AND METHOD

Gerald D. Westlund, 6684 Central Ave. N., Fridley, Minn. 55432

Filed Jan. 12, 1977, Ser. No. 758,657

Int. Cl.[2] B67B *5/00*

U.S. Cl. 53—585 **6 Claims**



1. In a banding apparatus applying a band to an article to be banded, having means for feeding a tube, means for opening such tube, means for cutting such band from such tube, means for rapidly presenting each of a plurality of such articles sequentially to a banding platform, and timing means for controlling the sequence of operation of the various means of the banding apparatus, the improvement comprising:

(A) an elongated mandrel aligned along a straight line path between said cutting means and the article at said banding platform, said mandrel including a receiving end receiving the tube and a delivery end off of which a band is stripped, said mandrel having at least one groove extending between said receiving and said delivery ends;

(B) band urging means for urging the band cut from the tube onto and along the length of said mandrel and for stripping the band from said mandrel delivery end onto the article to be banded, said means for urging the band including at least one finger disposed out of contact with the tube as the tube is fed onto said mandrel receiving end but responsive to cutting the band to move inwardly toward said mandrel groove and downwardly along said groove to engage the upper end of the band and urge the band along and off said mandrel and onto the article to be banded, said means also including arms secured to a movable cam block which is mounted for shuttle-like travel parallel and adjacent to said mandrel; and

(C) holding means for operably holding said mandrel in synchronism with said band urging means to permit passage of the band past said holding means, said cam block including a lower end which operates in advance of the band to sequentially disengage said holding means from said mandrel as said cam block moves downwardly toward said delivery end, said cam block holding said arms in disengagement from said mandrel until the band has traversed past said arms, whereby when an open end of the tube is fed onto the receiving end of said mandrel and the tube is cut to provide a band, movement of the band from the time and position of cutting until the band is at least partially positioned on an article is controlled and guided by the mandrel, and control and guidance of the band, if any, during any remaining position of the band over the article is by the article itself.

4,148,172

BLINKER ASSEMBLY

Pete Fer, 2020 S. Mesa St., San Pedro, Calif. 90731

Filed Sep. 7, 1976, Ser. No. 720,608

Int. Cl.[2] B68C *5/00*

U.S. Cl. 54—80 **1 Claim**

1. A blinker assembly for a horse, comprising

a headdress for a horse, having holes for the horse's eyes; and

at least one blinker attached to said headdress to partially obscure the vision of the horse, said blinker having a mirrored surface on the inside thereof such that the horse will see said mirrored surface.

4,148,173

LAWN MOWER BLADE CONTROL APPARATUS

Stephen J. Hoff, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.

Division of Ser. No. 581,029, May 27, 1975, Pat. No. 4,035,994.

This application Jan. 3, 1977, Ser. No. 756,200

The portion of the term of this patent subsequent to Jul. 19, 1994, has been disclaimed.

Int. Cl.[2] A01D *69/08, 69/10*

U.S. Cl. 56—11.3 **12 Claims**

1. A drive assembly for mounting a lawn mower blade on an

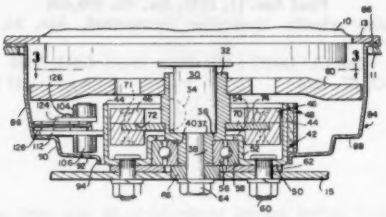
engine drive shaft, to be selectively driven thereby and released therefrom for braking, comprising

a hub adapted to be fixed on the shaft and shaped to provide a bearing sleeve terminating at an outward-facing shoulder,

a driven element having an outer cylindrical drum and an inner bearing ring disposed within a portion of the axial length of the drum and having an in-turned flange at its inner end, said ring being shorter than the drum so as to leave clutch mounting space between the hub and drum,

a ball bearing having an inner race mounted on the bearing sleeve of the hub and an outer race mounted in the bearing ring of the driven element to support the same for free rotation coaxially with the hub,

a retainer washer to engage against the outer face of said inner race to secure the race against said shoulder,



a retainer plate mounted on said driven element and against said outer race to secure the race against said in-turned flange,

clutch means mounted between the hub and drum for clutching the drum to the hub, said clutch means comprising a clutch shoe carrier on the hub within the drum, and clutch shoes carried by the carrier in nested relation between the bearing ring and the drum of said driven element, and movable outward into clutching engagement with the drum; and

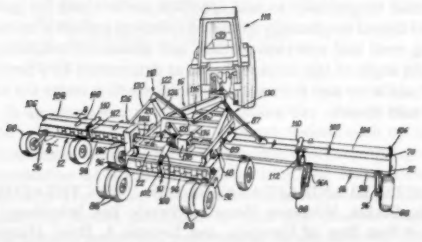
a flywheel fixed on the hub at the opposite end thereof from said bearing sleeve and adapted to provide a major portion of the flywheel mass of the engine to which the hub is mounted.

4,148,174

FOLD-UP CROP VEGETATION CUTTING IMPLEMENT

Bernard C. Mathews, and John A. Rogers, both of Crystal Lake, Ill., assignors to Mathews Company, Crystal Lake, Ill.

Filed Dec. 15, 1976, Ser. No. 750,616
Int. Cl.[2] A01D *55/22*
U.S. Cl. 56—12.7 **15 Claims**



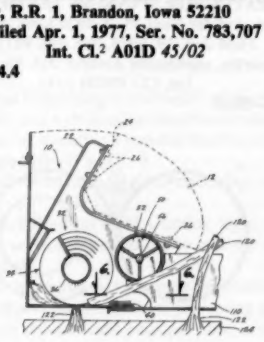
1. An agricultural machine adapted to be drawn in a field in an intended direction of travel by a tractor having a rear hitch and a rear power takeoff comprising, in combination: a frame having a rear end and a front end aligned with the intended direction of travel,; means for coupling the front end of the frame on the rear hitch of the tractor; a first wheel; means for rotatably mounting the first wheel on and extending below the frame at the rear end thereof for supporting the frame, said first wheel being aligned with the intended direction of travel and said mounting means including means for adjusting the distance the first wheel extends below the frame; a first crop severing unit for processing plant material on the field mounted on and below the frame at the rear end thereof, said first unit having a rotatable blade and a power input shaft extending generally normal to the intended direction of travel; a second crop severing unit for processing plant material extending from the field having opposite ends, said second unit having a rotatable blade and being pivotally mounted at one end on the frame forwardly of the first unit on an axis generally parallel to the intended direction of travel, and said second crop severing unit extending outwardly from the frame, said second unit having a power input shaft parallel to the power input shaft of the first unit; a second wheel; means for rotatably mounting the second wheel on and extending below the second unit outwardly from the frame and parallel to the first wheel for supporting the second unit including means for adjusting the distance the second wheel extends below the second unit; and power coupling means having a first shaft rotatably mounted on and below the frame having an end adapted to engage the tractor power takeoff, said power coupling means having a second shaft rotatably mounted on the frame generally parallel and adjacent to the rear end of the frame, said power coupling means including a gear box mounted on the frame having a rotatable input member connected to the first shaft and an output member rotatable on an axis aligned with and connected to the second shaft, means to couple the second shaft to the power input shaft of the first unit, and means to couple the second shaft to the power input shaft of the second unit.

4,148,175

CORN STALK HARVESTER AND WINDROW ATTACHMENT FOR A CORN PICKER HEADER

Kent A. Miller, R.R. 1, Brandon, Iowa 52210

Filed Apr. 1, 1977, Ser. No. 783,707
Int. Cl.[2] A01D *45/02*
U.S. Cl. 56—14.4 **8 Claims**



1. In combination a corn picker header and corn stalk harvesting and windrow attachment comprising,

a corn picker header having an elongated header frame,

a corn stalk harvesting and windrow attachment positioned under said header and having an attachment frame connected to said header frame,

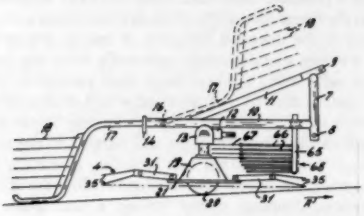
conveyor means extending the substantial length of said attachment frame for conveying corn stalks to a discharge means, and

a stalk cutting means positioned ahead of said conveyor means and extending the substantial length of said attachment frame for cutting stalks to be received by said conveyor means whereby they are conveyed to said discharge means and discharged rearwardly as a windrow.

4,148,176
HAY MAKING MACHINE

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed Jul. 12, 1977, Ser. No. 814,467
Claims priority, application Netherlands, Jul. 16, 1976, 7607884
Int. Cl.[2] A01D *79/09*
U.S. Cl. 56—370 36 Claims

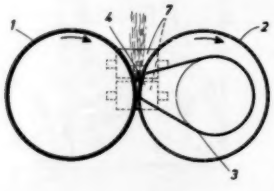


1. A haymaking machine comprising a frame and at least two side-by-side rake members rotatably mounted on said frame, driving means connected to drive said members in mutually opposite directions of rotation about respective upwardly extending axes to a central region between said members, each rake member having tines with crop working portions extending outwardly from their axes of rotation and generally parallel to the ground during operation, a crop guide assembly supported on the frame and positioned in front of said members with respect to the normal direction of machine travel, said assembly comprising two upwardly extending side walls which converge towards the rear, said walls being positionable above the ground and between said rake members, said walls defining respective planes each of which intersects the path of movement of the tines of a corresponding rake member.

4,148,177
APPARATUS FOR SPINNING TEXTILE FIBERS

Ernst Fehrer, Auf der Gugl 28, A-4020 Linz, Austria

Filed Jun. 19, 1978, Ser. No. 917,016
Claims priority, application Austria, Jul. 13, 1977, 5020/77
Int. Cl.[2] D01H *1/12*
U.S. Cl. 57—58.89 2 Claims



1. Apparatus for spinning textile fibers comprising juxtaposed, closely spaced, first and second drums, one of which is approximately as large as the other and which define between them a triangular space adapted to receive textile fibers approaching on one side of said drums in a freely flying state,

suction-exerting means provided only in said first drum and operable to subject said fibers in said triangular space to suction,

said first drum having a suction zone adjoining said triangular space and communicating with said suction-exerting means,

said second drum having a structured outside peripheral surface,

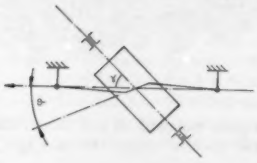
said first and second drums being operable to rotate in the same sense to that said first drum revolves away from said triangular space and said second drum revolves toward said triangular space on said one side of said drum so that said fibers received in said triangular space and subjected to suction therein through said suction zone are twisted together to form a yarn when said first and second drums are thus rotated;

said apparatus further comprising means for withdrawing said yarn toward one end of each of said first and second drums while holding said yarn against rotation.

4,148,178
DEVICES FOR DETERMINING THE HELIX ANGLE OF TWISTED THREADS DURING FALSE-TWIST TEXTURING

Josef Raschle, Bütschwil, Switzerland, assignor to Heberlein Maschinenfabrik AG, Switzerland

Filed Apr. 11, 1978, Ser. No. 895,436
Claims priority, application Switzerland, Apr. 14, 1977, 4671/77
Int. Cl.[2] D02G *1/02;* G01N *33/36;* G01L *5/06*
U.S. Cl. 57—264 11 Claims



1. A device for determining the helix angle of twisted threads during false-twist texturing, the device including a lever unit comprising a bearing member, a first lever arm extending upwards from said bearing member, and a second lever arm, coaxial with said first lever arm, extending downwards from said bearing member, and the device further including a body fixed to the top of said first lever arm, said body being formed with an upper convex spherical surface having a radius of curvature substantially equal to the distance between said surface and said bearing member, and said surface being symmetrically disposed with respect to said first lever arm, universal bearing means supporting said bearing member permitting said lever unit to swing in any direction about a point from a zero axial position wherein said arms are vertical, means operative on said second arm for biasing said lever unit to said zero position, means for guiding a travelling length of twisted thread tangentially to said spherical surface and for guiding said thread tangentially from said spherical surface after travelling over said spherical surface, and means for indicating the helix angle of said twisted thread as determined by a deviation of said lever unit from said zero axial position under the action of said thread.

4,148,179
METHOD AND APPARATUS FOR YARN TREATMENT

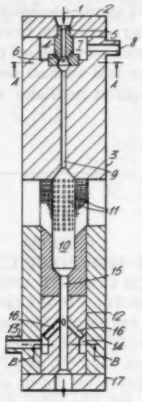
Tilo Becker, Wiesloch; Hermann Storck, Bad Schonborn, both of Fed. Rep. of Germany, and Terence A. Dyer, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 1, 1977, Ser. No. 856,508
Claims priority, application United Kingdom, Dec. 1, 1976, 50086/76
Int. Cl.[2] D02J *1/08, 13/00*
U.S. Cl. 57—350 13 Claims

9. An apparatus for modifying the properties of a bulked

yarn comprising a conduit having at least two longitudinally-spaced jet arrangements

(a) at least one jet arrangement having means to direct fluid into the conduit such as to exert a twisting action on a yarn in the conduit and



(b) at least one jet arrangement having means to direct heated fluid into the conduit for heating the yarn and

(c) at least one jet arrangement having means to direct fluid into the conduit to cool the yarn.

4,148,180

ELECTRONIC TIMEPIECE CIRCUIT FOR AUTOMATICALLY DISPLAYING THE DAY OF THE WEEK

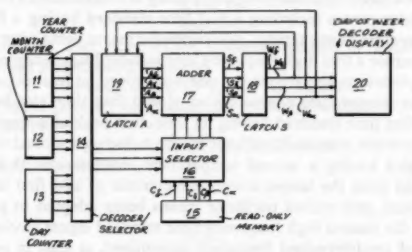
Shuji Maezawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 11, 1977, Ser. No. 796,112

Claims priority, application Japan, May 11, 1976, 51-53706

Int. Cl.[2] G04B *19/24*; G04C *3/00*

U.S. Cl. 58—4 A **9 Claims**



1. In an electronic timepiece including day counter means, month counter means and year counter means, each of said counter means being adapted to produce timekeeping signals representative of a binary count thereof, the improvement comprising day of the week means adapted to receive said timekeeping signals produced by said day counter means, month counter means and year counter means, said day of the week means being adapted to sum said timekeeping signals produced by said respective counter means and divide the summed signals by seven to thereby produce a remainder signal representative of the day of the week, and day of the week decoder and display means for decoding the day of the week signal and in response thereto effecting a display of the day of the week.

4,148,181

SYSTEM FOR CONTROLLING THE STRIKING MECHANISM OF A TIMEPIECE

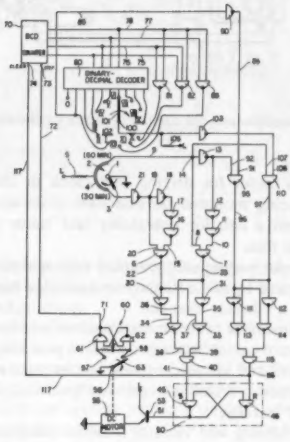
Erich Scheer, St. Georgen-Peterzell, Fed. Rep. of Germany, assignor to Kieninger & Obergfell, Fabrik für Technische Laufwerke und Apparate, St. Georgen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 775,756, Mar. 9, 1977, abandoned. This application May 11, 1977, Ser. No. 795,769

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1976, 2609871

Int. Cl.[2] G04B *21/12*; G04C *21/36*

U.S. Cl. 58—13 **29 Claims**



1. In a timepiece comprising a clockwork with a minute shaft and an hour shaft, and a striking mechanism for announcing at least the full hour by sounding a variable number of strikes, the combination therewith of:

normally inactive drive means for operating said striking mechanism;

a normally reset flip-flop with a setting input, a resetting input, and a set output connected to said drive means for activating same;

trigger means including a first rotating contact member coupled with said minute shaft for delivering a start signal to said setting input at least once per hour to activate said drive means;

electronic pulsing means synchronized with said striking mechanism for emitting a number of voltage pulses proportional to said number of strikes;

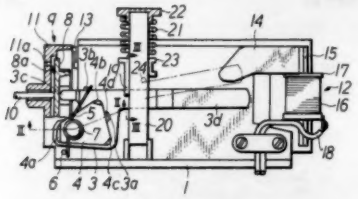
a pulse counter with a stepping input connected to said pulsing means, output circuitry including a set of leads generating a pattern of energization determined by the count of said voltage pulses, and a clearing input for establishing a zero pulse count; and

deactivating means including said output circuitry and a second rotating contact member coupled with said hour shaft for delivering a stop signal to said resetting and clearing inputs upon said pattern of energization bearing a predetermined relationship with the position of said hour shaft.

4,148,182
BUZZER MECHANISM FOR ALARM CLOCK OR THE LIKE

Shuzo Abe; Yukio Endo, and Yoshito Otsuki, all of Okaya, Japan, assignors to Kabushiki Kaisha Seikosha, Japan

Filed Apr. 26, 1977, Ser. No. 790,985
Claims priority, application Japan, Apr. 26, 1976, 51-47481; Aug. 3, 1976, 51-92479
Int. Cl.² G04C 21/16
U.S. Cl. 58—16 R 11 Claims



1. Buzzer mechanism for an alarm clock or the like comprising:

a base plate,

an electric motor for driving said clock or the like, said motor being mounted on said base plate and having a stator and a coil for energizing said stator to produce magnetic flux,

a buzzer yoke magnetically coupled with said stator so as to be energized by said coil and being adapted to receive and activate a vibrator member,

a vibrator member pivotally mounted on said base plate for pivotal movement between an active position in which it is received and vibrated by said buzzer yoke and an inactive position in which it is removed from said yoke and not vibrated thereby,

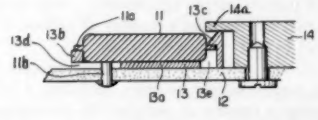
means for biasing said vibrator member rotationally to said active position, and

settable time controlled means for normally holding said vibrator member in inactive position against the action of said bias and for releasing said vibrator member at a preset time for movement by said biasing means to said active position whereupon it is vibrated by said buzzer yoke.

4,148,183
SUPPORTING STRUCTURE FOR QUARTZ OSCILLATOR

Tomomi Murakami, Higashiyamato, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Apr. 20, 1977, Ser. No. 789,156
Claims priority, application Japan, Apr. 24, 1976, 51/46834; Jul. 1, 1976, 51/78445
Int. Cl.² G04C 3/00
U.S. Cl. 58—23 V 9 Claims



1. In an electronic timepiece having a quartz oscillator including terminal pins extending from one end portion of the quartz oscillator and a flange extending outwardly from an outer periphery of the quartz oscillator, a combination comprising:

a base plate;

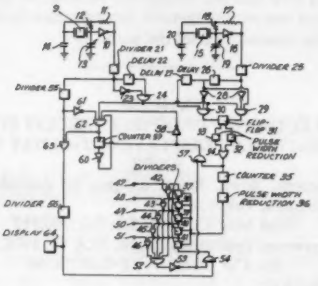
a circuit substrate mounted on said base plate and supporting the one end portion of said quartz oscillator by means of said terminal pins connected thereto; and

a supporting member made of elastic material and including a flat portion sandwiched between said quartz oscillator and said circuit substrate, a vertical portion projecting vertically from said flat portion and engaging the outer periphery of said quartz oscillator, and at least one hook portion extending vertically from said flat portion at a position away from said terminal pins of said quartz oscillator retained by said vertical portion and retaining the flange of said quartz oscillator at another end portion thereof.

4,148,184
ELECTRONIC TIMEPIECE UTILIZING MAIN OSCILLATOR CIRCUIT AND SECONDARY OSCILLATOR CIRCUIT

Yoshikazu Akahane, and Shinji Morozumi, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jul. 21, 1977, Ser. No. 817,776
Claims priority, application Japan, Jul. 21, 1976, 51/86751
Int. Cl.² G04C 3/00
U.S. Cl. 58—23 AC 13 Claims



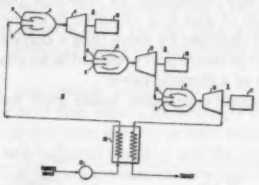
1. An electronic timepiece comprising in combination a main oscillator means including a first time standard having a first temperature characteristic, said oscillator means being adapted to produce a first high frequency time standard signal having a first predetermined frequency rate determined, at least in part, by the temperature characteristic of said first time standard, said first time standard having an inflection peak at a specific temperature, a second oscillator means including a second time standard having a second temperature characteristic that is distinct from the temperature characteristic of said first time standard, said second oscillator means being adapted to produce the second high frequency time standard signal having a second predetermined frequency determined, at least in part, by the temperature characteristic of said second time standard, phase detection means for producing a phase detection signal in response to detecting a predetermined difference in phase between said first high frequency time standard signal and said second high frequency time standard signal when the temperature is one of at least 10° higher or lower than the specific temperature at which the first time standard has its inflection peak, divider means for producing a low frequency time standard signal, display means for displaying actual time in response to said low frequency time signal applied thereto, and frequency adjustment means coupled intermediate said phase detection means and said divider means for adjusting the frequency of said low frequency time signal produced by said divider means in response to said phase detection signal being applied thereto.

4,148,185

DOUBLE REHEAT HYDROGEN/OXYGEN COMBUSTION TURBINE SYSTEM

Edward V. Somers, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 15, 1977, Ser. No. 824,591
Int. Cl.[2] F02C 3/18
U.S. Cl. 60—39.17 4 Claims



1. A gas turbine power generating system employing hydrogen and oxygen as the gas turbine fuel to form a motive fluid of superheated steam, said system comprising:

a plurality of gas turbine engines each having a combustion chamber in motive fluid flow communication with a turbine and wherein said gas turbine engines are in serially-connected motive fluid flow communication such that the exhaust steam exiting the upstream turbine is introduced into and reheated in the combustion chamber of the next downstream gas turbine engine, and wherein each of said gas turbine engines in said system is operatively associated with a generator; and,

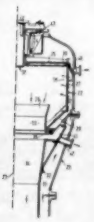
further including exhaust heat recuperative means wherein the exhaust steam from the last of said gas turbine engines is passed in heat-exchange relationship with pressurized water to heat said water to an elevated temperature and wherein said pressurized and heated water exiting from said heat recuperative means is fed to the combustion chamber of the first of said gas turbine engines to maintain the combustion temperature therein within a predetermined range.

4,148,186

ENGINE

Michael J. Virr, Stourbridge, England, assignor to Stone-Platt Fluid Fire Limited, England

Filed Jul. 14, 1977, Ser. No. 815,842
Claims priority, application United Kingdom, Jul. 17, 1976, 29864/76
Int. Cl.[2] F02C 3/26; F23D 19/00
U.S. Cl. 60—39.35 6 Claims



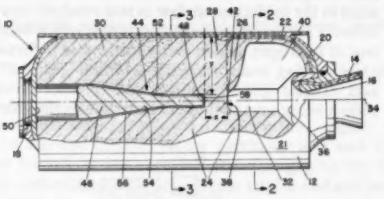
1. An engine comprising: a turbine in a power duct; a drum having a circumferentially extending wall which is permeable to gases, a gas outlet remote from the circumferentially extending wall and communicating with the power duct and a solids outlet adjacent to the circumferentially extending wall; a casing in which the drum is contained; means for supporting the drum for rotation relative to the casing and rotating the drum about a substantially vertical axis; a bed of particles which is supported in the drum at least during operation of the engine; means for feeding air into the drum through the circumferentially extending wall to fluidise the bed of particles; and means for delivering a fuel comprising solid fuel particles into the drum; whereby fuel burns in the bed of particles, the hot products of combustion pass through the gas outlet to the power duct to drive the turbine and excess particles are discharged from the bed through the solids outlet.

4,148,187

RADIAL END BURNER ROCKET MOTOR

Harry A. Younkin, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 5, 1976, Ser. No. 739,388
Int. Cl.[2] F02K 9/04
U.S. Cl. 60—245 8 Claims



1. A solid propellant rocket motor grain comprising:

a one-piece, solid base propellant having a cylindrical external configuration;

said base propellant having a forward end section, a central web section and an aft end section;

said aft end section having a central longitudinal cavity extending throughout the length of the aft end section;

said forward end section having a single, central, longitudinal cavity extending throughout the entire length of said forward end section, wherein a part of said cavity in said forward end section has the shape of a truncated cone, with taper of said core increasing from the aft end to the forward end of said forward end section, said cavity in said forward end section being filled with solid propellant continuously throughout the entire length of said cavity, said solid propellant in said forward end section cavity having a substantially higher burning rate than the burning rate of said base propellant;

said central web section being defined between said forward end section and said aft end section of said solid base propellant, said central web section being that part of the base propellant having a continuous circular cross-sectional area.

4,148,188

INTERNAL COMBUSTION ENGINE EQUIPPED WITH CATALYTIC CONVERTER

Naomi Tokura, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 2, 1977, Ser. No. 764,984
Claims priority, application Japan, Feb. 6, 1976, 51-11909
Int. Cl.[2] F01N 3/15
U.S. Cl. 60—276 4 Claims

1. An internal combustion engine having a combustion chamber and being operated on a fuel containing sulfur, comprising:

fuel supply means for controllably supplying the fuel into an air induction passageway communicating the atmosphere and the combustion chamber to induct air into the combustion chamber;

a catalytic converter having therein an oxidation catalyst for oxidizing the unburned constituents contained in the exhaust gases discharged from the combustion chamber, said

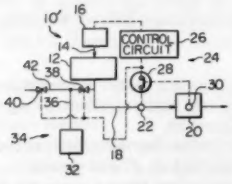
catalytic converter being connected to the combustion chamber through an exhaust gas passageway;

an exhaust gas sensor disposed in the exhaust gas passageway upstream of said catalytic converter and arranged to generate an information signal representing the composition of the exhaust gases passing through the exhaust gas passageway;

a control circuit electrically connected between said exhaust gas sensor and said fuel supply means and arranged to control, in response to the information signal, the amount of fuel supplied from said fuel supply means to feed the combustion chamber with an air-fuel mixture having an air-fuel ratio within a range which develops exhaust gases having an air-fuel ratio ranging from 14:1 to 15.5:1, said exhaust gases being discharged into the exhaust gas passageway upstream of said catalytic converter;

means for interrupting the electrical connection between said exhaust gas sensor and control circuit to stop the control operation of said control circuit when the temperature in the oxidation catalyst in said catalytic converter is below a predetermined temperature above which at least one of hydrogen sulfide and sulfuric acid is formable;

the interrupting means including a switch disposed between said exhaust gas sensor and said control circuit, said switch being operated to (1) close to establish the electrical connection between said exhaust gas sensor and said control circuit and (2) open to interrupt the electrical connection between the same, and a temperature sensor disposed in said catalytic converter and electrically connected to said switch, said temperature sensor being arranged to normally allow the switch to open and to cause the switch to close when the temperature in said oxidation catalyst in said catalytic converter exceeds said predetermined temperature; and



secondary air supply means for supplying secondary air into the exhaust gas passageway upstream of said exhaust gas sensor while the electrical connection between said exhaust gas sensor and said control circuit is interrupted, said secondary air supply means including a secondary air source connected through a secondary air supply pipe to the exhaust gas passageway for supplying under pressure secondary air into the exhaust gas passageway, and a first electromagnetic valve disposed in the secondary air supply pipe which is arranged to open to establish the fluid communication between said air source and the exhaust gas passageway and to close to block the fluid communication between the same, said first electromagnetic valve being electrically connected between said switch and said control circuit to close when said switch closes and to open when said switch opens

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4,148,189

EXHAUST GAS PURIFYING SYSTEM FOR ENGINES

Kazuhiro Siki, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation-in-part of Ser. No. 511,999, Oct. 4, 1974, abandoned. This application Mar. 18, 1977, Ser. No. 779,149

Int. Cl.[2] F01N *3/10*

U.S. Cl. 60—290 **6 Claims**

1. An exhaut gas purifying system of the type of injecting a secondary air pumped by an air pump and through a secondary air supply pipe and injected from a secondary air injection port provided in the vicinity of the exhaust valve of an engine for reburning the unburned part of the exhaust gases produced in the engine, wherein said system comprises,

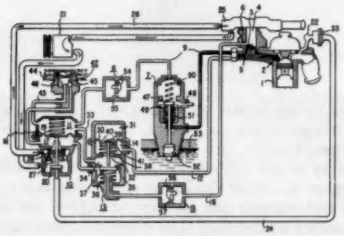
a diaphragm provided adjacent said secondary air supply pipe;

a first and a second negative pressure chambers forming a pair to sandwich said diaphragm;

an air switching valve attached to said diaphragm to open said secondary air supply pipe and forward the secondary air to said secondary air injection port only when the pressure of said first chamber is lower than that of said second chamber by more than a certain degree;

a negative pressure port provided in an intake passage downstream of a throttle valve;

a first negative pressure intake pipe for connecting said negative pressure intake port with said first negative pressure chamber of said air switching valve;



an air injection cut port provided in said intake passage in such a point thereof as located above said throttle valve when engine speed is low and to be located below said throttle valve when said throttle valve is open, and

a vacuum control valve provided in a second negative pressure pipe to connect said air injection cut port with said second negative pressure chamber of said air switching valve, said vacuum control valve being actuated by intake negative pressure downstream of said throttle valve, normally closing said second negative pressure pipe and alternately connecting said first and second negative pressure chambers of said air switching valve to each other for a certain period of time after the intake negative pressure is suddenly increased at more than a certain rate.

4,148,190

MASTER CYLINDER

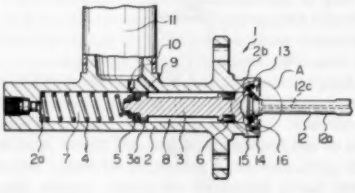
Yoshihiro Hayashida, Chigasaki, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed May 16, 1977, Ser. No. 797,114

Claims priority, application Japan, May 14, 1976, 51-55046

Int. Cl.[2] B60T *7/02*; F15B *7/08*

U.S. Cl. 60—594 **5 Claims**



1. A master cylinder comprising:

a housing defining therein a cylinder having an open end;

a piston slidably fitting within said cylinder;

a push rod having a head portion and a stem portion extending axially from said head portion through said open end of said cylinder, said push rod being movable from a

non-actuated position to an actuated position whereat said head portion moves said piston within said cylinder to compress hydraulic fluid within said cylinder;

spring means for urging said piston toward said open end of said cylinder and for thereby urging said push rod to said non-actuated position;

stop ring means retained in said housing adjacent said open end of said cylinder for abutting against said head portion when said push rod is urged to said non-actuated position and for thereby defining said non-actuated position;

first annular seal means, disposed between a radial shoulder formed in said housing and a radially outer portion of the axially inner surface of said stop ring means, for defining a first seal;

second annular seal means, secured to the axially outer surface of said stop ring means, for sealingly engaging an outer surface of said stem portion at least when said push rod is in said non-actuated position, and for thereby forming a second seal sealing the interior of said cylinder from the exterior atmosphere when said push rod is in said non-actuated position; and

relief means for releasing said second seal and thereby connecting a portion of said interior of said cylinder with the exterior atmosphere when said push rod moves from said non-actuated position toward said actuated position.

4,148,191

METHOD FOR REGULATING THE POWER OUTPUT OF A THERMODYNAMIC SYSTEM OPERATING ON A CLOSED GAS CYCLE AND APPARATUS FOR CARRYING OUT THE METHOD

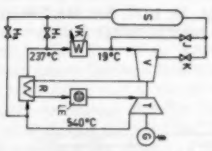
Hansulrich Frutschi, Riniken, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Dec. 8, 1976, Ser. No. 748,771

Claims priority, application Switzerland, Dec. 23, 1975, 16657/75

Int. Cl.² F02C *1/04*

U.S. Cl. 60—652 **17 Claims**



1. In the method for controlling the power output of a closed cycle type of thermodynamic system such as a gas turbine power plant wherein a gaseous working medium circulates through components of the system including a heat exchanger, a compressor and a turbine in a closed circuit, the improvement wherein a storage tank for the gaseous working medium is connected in parallel with at least three sectional portions of the closed circuit and wherein gaseous working medium in a hot or cold state selectively is flowed through the storage tank such that due to the corresponding change in gas density within the tank, the gaseous working medium is selectively withdrawn from the closed circuit or the gaseous working medium is delivered into the closed circuit.

4,148,192

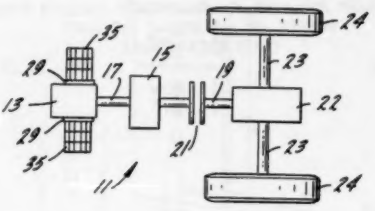
INTERNAL COMBUSTION ELECTRIC POWER HYBRID POWER PLANT

Troy A. Cummings, 912 Margate Ter., Chicago, Ill. 60640

Filed Nov. 23, 1977, Ser. No. 854,263

Int. Cl.² F02B *73/00*; B60K *1/00*

U.S. Cl. 60—716 **5 Claims**



1. An internal combustion-electric hybrid power plant including:

an internal combustion engine,

a direct current electric motor generator,

a drive shaft,

means connecting said internal combustion engine, said direct current electric motor generator and said drive shaft for selectively engaging and disengaging the drive shaft with said internal combustion engine and said motor generator,

at least one electric storage battery electrically connected to said motor generator to supply current to and receive current therefrom,

thermoelectric semi-conductors arranged to be heated by the waste heat of said internal combustion engine,

said thermoelectric semi-conductors electrically connected to said battery to supply current thereto.

4,148,193

METHOD AND APPARATUS FOR PRODUCING UNDERGROUND INSTALLATIONS OF CONCRETE PIPE

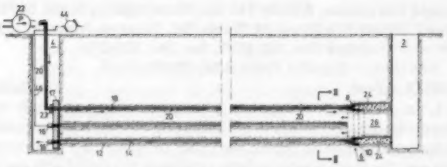
Samuel Mottes, 40 Yehuda Hanassi St., Tel Aviv, Israel

Filed Nov. 23, 1977, Ser. No. 854,225

Claims priority, application Israel, Dec. 8, 1976, 51070

Int. Cl.² F16L *1/04*

U.S. Cl. 405—155 **5 Claims**



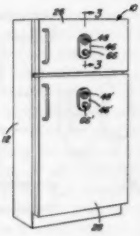
1. A method of producing an underground installation of concrete pipe, comprising: sinking a shaft into the ground at each of two spaced locations between which the concrete pipe is to be installed; disposing in one shaft a slipform-shield device having an annular cutting section on the side facing the other shaft, and an annular trailing section on the opposite side; passing pulling cables through the ground from said other shaft to the slipform-shield device and attaching said cables to the slipform-shield device; pulling, by means of said pulling cables, the slipform-shield device towards said other shaft while simultaneously feeding concrete to said trailing section to thereby fill the resulting void by a cast tubular layer of concrete embedded in and supported by the ground; permitting the cast concrete tubular layer to set; and removing the soil from within said cast concrete tubular layer.

4,148,194

REFRIGERATOR TEMPERATURE CONTROLS

John D. Kells, 1678 71st St., Brooklyn, N.Y. 11204

Filed Sep. 15, 1977, Ser. No. 833,813
Int. Cl.[2] F25B 21/02; F25D 29/00, 11/02
U.S. Cl. 62—3 1 Claim



1. In a refrigerator having cool and freezer compartments and a door for each compartment having an improved design and arrangement of the elements of a temperature control unit for manually regulating, with improved modality, compartment temperature from outside the refrigerator, each such control unit comprising a consolidated instrument panel containing two elements in juxtaposition, one element comprising a temperature indicator for the visible monitoring of internal compartment temperature and the second element comprising a manually operable rotatable temperature selector including a pointer registrable over a fixed calibrated temperature scale, said temperature selector being operative of a thermoelectric mechanism to regulate internal compartment temperature at the discretion of the operator of the rotatable temperature selector, said temperature control units each being externally mounted on and integral with the corresponding compartment door, each rotatable temperature selector being manually rotatable from exteriorly of the associated compartment door and each thermoelectric mechanism being recessed inwardly of the inner side of the associated door and having a protective shield thereover, the recessing of the thermoelectric mechanisms within the inner sides of the associated compartment doors resulting in elimination of space consuming thermoelectric mechanism housing chambers within the cool and freezer compartments.

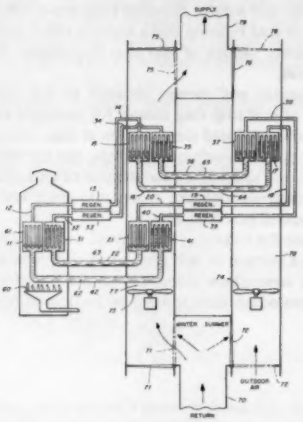
4,148,195

LIQUID PISTON HEAT-ACTUATED HEAT PUMP AND METHODS OF OPERATING SAME

Joseph Gerstmann, 5 Tally Ho La., Framingham, Mass. 01701, and Yizhak Friedman, 31 Walsh Rd., Newton, Mass. 02159

Filed Dec. 12, 1977, Ser. No. 859,571
Int. Cl.[2] F25B 9/00; F01B 29/08
U.S. Cl. 62—6 16 Claims

1. In a method of supplying heat or cooling through the thermally induced motions of fluids, one of which is a substantially incompressible liquid, the other of which is a compressible gas, the steps which include confining the liquid and gas in continuously connected enclosure means comprising fluid conduits and heat exchangers, said enclosure means including a first heat exchanger connected at its top through a first conduit means to the top of a second heat exchanger, said second heat exchanger connected at its bottom through a second conduit means to the bottom of a third heat exchanger, said third heat exchanger connected at its top through a third conduit means to the top of a fourth heat exchanger, said fourth heat exchanger connected at its bottom through a fourth conduit means to the bottom of a fifth heat exchanger, said fifth heat exchanger connected at its top through a fifth conduit means to the top of a sixth heat exchanger, said sixth heat exchanger connected at its bottom through a sixth conduit means to the bottom of a seventh heat exchanger, said seventh heat exchanger connected at its top through a seventh conduit means to the top of an eighth heat exchanger and said eighth heat exchanger connected at its bottom through an eighth conduit means to the bottom of said first heat exchanger, said substantially incompressible liquid being releasably confined as separate liquid bodies to constitute free liquid pistons in the second, fourth, sixth and eighth conduits and each of the liquid bodies being partially and reversibly transferable into both respective heat exchangers with which that conduit connects, and said compressible gas being releasably confined as separate gaseous bodies in each of said first, third, fifth and seventh



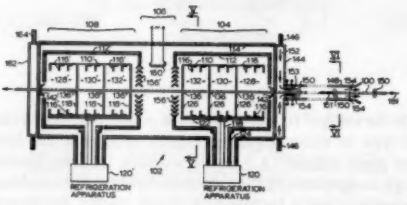
conduits, each of the gaseous bodies being partially and reversibly transferable through respective conduits into both respective heat exchangers with which that conduit connects, heating said first and fifth heat exchangers to a relatively high temperature by directing a flow of heat into said heat exchangers, introducing heat into said third and seventh heat exchangers from an external medium at a relatively low temperature, and releasing heat from said second, sixth, fourth and eighth heat exchangers to a cooling medium in a range of intermediate temperatures.

4,148,196

MULTIPLE STAGE CRYOGENIC PUMP AND METHOD OF PUMPING

John B. French; Neil M. Reid, both of Thornhill, and Janette A. Buckley, Willowdale; all of Canada, assignors to Sciex Inc., Thornhill, Canada

Filed Apr. 25, 1977, Ser. No. 790,215
Int. Cl.[2] B01D 5/00
U.S. Cl. 62—55.5 15 Claims



1. Apparatus for transferring matter or species between a gas and a vacuum, said gas being essentially a gas, which when deposited in solid phase, has a vapour pressure substantially less than atmospheric at a predetermined temperature, said apparatus comprising:

(1) a vacuum chamber having an orifice therein, for travel through said orifice of said matter or species,

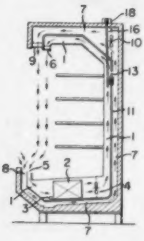
(2) means for moving said matter or species through said orifice,
(3) said orifice being dimensioned to permit leakage of some of said gas into said chamber as said matter or species moves therethrough,
(4) means for guiding said matter or species along a predetermined path in said chamber,
(5) said chamber having an interior surface spaced from said path and substantially encircling said path,
(6) a single refrigerating device for cooling said surface to said predetermined temperature whereby to deposit said gas in solid phase on said surface,
(7) said chamber having at least one internal divider dividing said chamber into a first region adjacent said orifice and a second region downstream from said first region, said divider having an aperture at said path to permit passage of said matter or species therethrough, said surface extending in both said regions and said divider extending to a location at least closely adjacent said surface, whereby when said surface is cooled to said predetermined temperature, the pressure in said second region is lower than that in said first region but said matter or species may be guided along said path between said first region and said second region.

4,148,197

DEFROSTER ARRANGEMENT IN A REFRIGERATING SHOWCASE

Masashi Karashima, 2-40-7,Sangenjaya, Setagaya-ku, Tokyo, Japan

Filed May 25, 1977, Ser. No. 800,554
Claims priority, application Japan, Apr. 25, 1977, 52/46803
Int. Cl.[2] A47F *3/04*
U.S. Cl. 62—256 **2 Claims**



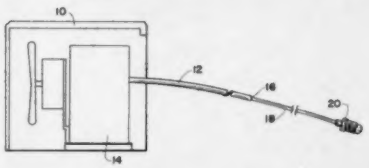
1. A refrigerating apparatus comprising:
an open front showcase;
inside duct means around the inside of said showcase for circulating a first flow of air across said open front, said inside duct means having a first inlet at the bottom of said open front, a first outlet at the top of said open front, and a first duct connecting said first inlet and outlet;
a refrigerating device between said first inlet and said first outlet within said first duct;
a defrosting heater within said first duct;
a first fan within said first duct;
outside duct means around the inside of said showcase adjacent said inside duct means for circulating a second flow of air across said open front next to said first air flow between said first air flow and the ambient, surrounding air, said outside duct means having a second inlet adjacent said first inlet, a second outlet adjacent said first outlet, and a second duct connecting said second outlet and second inlet;
a second fan in said second duct;
communication means between said first and second duct between the location of said first fan and said second fan for permitting the air flowing through said first duct to enter into said second duct; and
gate means fitted over said communication means for opening and closing said communication means between said first and second duct and for closing said second duct between said second inlet and said second fan when said communication means is open.

4,148,198

REFRIGERATION CHARGING AND SEALING DEVICE

Robert S. Kregoski, 15120 Amber Ct., Plymouth, Mich. 48170

Filed Oct. 7, 1976, Ser. No. 730,588
Int. Cl.[2] F25B *45/00*
U.S. Cl. 62—292 **5 Claims**



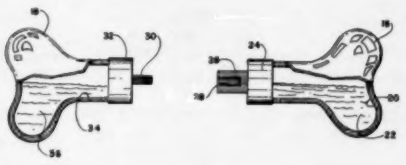
1. A refrigeration charging and sealing device, comprising:
a process tube of a refrigeration unit,
a capillary tube insertable in a distal end of the process tube,
means of sealing the capillary tube into the process tube, and
means of connecting a distal end of the capillary tube to a compressor charging device.

4,148,199

PIERCED EARRING WITH LIQUID VISIBLE THEREIN

John D. Boykin, 4158 Eastview Ave., Lake Worth, Fla. 33460

Filed Apr. 22, 1977, Ser. No. 789,817
Int. Cl.[2] A44C *7/00*
U.S. Cl. 63—12 **6 Claims**



1. An ornamental earring, comprising
a male component having a transparent enclosure formed in the shape of half an elongated element and defining a cavity only partially filled with a visible liquid; and
a female component having a transparent enclosure formed in the shape of the other half of the element and defining a cavity only partially filled with a visible liquid similar to the first liquid, said male and female components having cooperating coupling means for removably coupling them to each other through a pierced ear of a user in a manner whereby said components appear to be an elongated liquid-containing element passing through the user's ear.

4,148,200

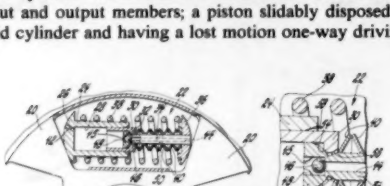
TORSIONAL VIBRATION DAMPER FOR A LOCK-UP CLUTCH

Thomas L. Schallhorn, Highland, and John M. Beardmore, South Lyon, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 5, 1978, Ser. No. 912,519
Int. Cl.[2] F16D *3/14, 47/02*
U.S. Cl. 64—27 C **4 Claims**

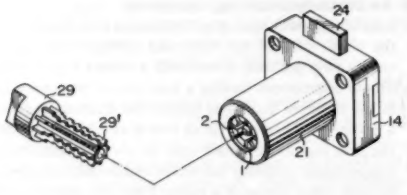
1. A vibration damper disposed within a torque converter

containing hydraulic fluid comprising; an input member; an output member; a fluid cylinder abutting one of said members and having a flow restriction formed therein; a plunger abutting the other of said members, said plunger having a passage communicating with said fluid cylinder and valve means for permitting fluid flow through said passage in one direction only; first spring means disposed between said plunger and said fluid cylinder for urging said plunger and said fluid cylinder respectively into abutting relation with said members and for permitting relative movement between said plunger and said fluid cylinder when relative movement occurs between the input and output members; a piston slidably disposed in said fluid cylinder and having a lost motion one-way driving con-



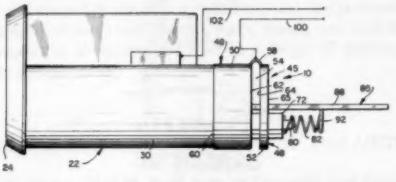
nection with said plunger and movable therewith to expand and contract the volume in said cylinder when relative movement occurs; and second spring means for moving said piston and plunger in unison during initial relative movement between said plunger and said fluid cylinder whereby fluid is pumped through said restriction and for permitting relative movement between said plunger and piston after a predetermined amount of relative movement between said plunger and cylinder, said valve means being operative to prevent fluid flow when said plunger and piston are moving in a direction to contract the volume in said cylinder and to permit fluid flow to said cylinder when said plunger and piston are moving in a direction to expand the volume in said cylinder.

4,148,201
LOCKING DEVICE
Yasuo Miyamae, Minanomachi, and Masuo Miyamae, Tokyo, both of Japan, assignors to Sanpo Lock Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 696,514, Jun. 16, 1976, abandoned. This application Dec. 21, 1977, Ser. No. 863,050
Int. Cl.[2] E05B *27/00*
U.S. Cl. 70—358 **3 Claims**



1. A locking device comprising:
an inner cylinder;
means defining a keyhole within said inner cylinder;
an outer cylinder having means defining a bore therein within which said inner cylinder is slidably disposed between first and second positions;
means disposed within said inner and outer cylinders for controlling the rotation of said inner cylinder relative to said outer cylinder comprising a plurality of radially disposed, spring-biased pins disposed within radially extending holes defined within said inner and outer cylinders;
a projection provided upon one end of said inner cylinder, and a first slot provided upon said outer cylinder;
lock bolt means for a locking or unlocking an apparatus with which said locking device is operatively associated;
cam means operatively connected to said lock bolt means for actuating said lock bolt means and operatively engageable with said inner cylinder;
means interposed between said cam means and said inner cylinder for normally disengaging said cam means and said inner cylinder by disposing said inner cylinder at said first position;
key means for moving said control means to operative positions so as to permit rotation of said inner cylinder relative to said outer cylinder and for moving said inner cylinder to said second position so as to engage said inner cylinder with said cam means whereby rotation of said inner cylinder relative to said outer cylinder rotates said cam means actuates said lock bolt means and
groove means operatively engageable with said projection, when said inner cylinder is in said second position and rotated relative to said outer cylinder for retaining said inner cylinder in said second position whereby said key means cannot be withdrawn from said locking device when said inner cylinder is in a rotated position relative to said outer cylinder and wherein said cam means comprises an operating cam, a cam plate, and a cam member interconnecting said operating cam and said cam plate such that said inner cylinder, said operating cam and said cam plate are rotatable together during said rotation of said inner cylinder relative to said outer cylinder so as to rotate said cam means and actuate said lock bolt means.

4,148,202
DETECTOR LOCK ASSEMBLY
Lucian Wegrzyn, 72 Semel Ave., Garfield, N.J. 07026
Filed Feb. 6, 1978, Ser. No. 875,143
Int. Cl.[2] E05B *17/00*
U.S. Cl. 70—431 **9 Claims**



1. A detector lock assembly comprising:
A. a cylinder body having a spaced apart front and rear end with a bore therein extending along an axis,
B. a plug rotatable in said bore on said axis,
C. means defining a keyway in said plug and adapted to receive therein a key of a defined length and configuration to permit rotation of said plug relative to said cylinder body,
D. detection means operatively associated with said cylinder body at said rear end thereof so as to establish an electrical circuit when a key or the like is inserted within said keyway that has a length that is less or greater than said defined length for the key, and
E. said detection means includes:
(1) a detection element having a front section and a rear section in fixed spaced relation to each other with a vertical channel therebetween,
(2) said front section mounted relative to said rear end of said body and having a longitudinally extending slot therein defining a pair of first contacting surfaces,
(3) said rear section extending rearwardly of said body and having a second contacting surface, and
(4) contacting means slidable in said keyway in response to the length of the key inserted therein for establishing possible electrical contact with said first contacting

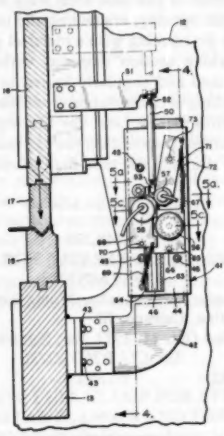
surfaces if the key inserted is too short or said second contacting surface if the key inserted is too long.

4,148,203

COMPUTER-CONTROLLED PRESS BRAKE

Assadollah Farazandeh, Aurora, and Buford R. Everett, Indian Head Park, both of Ill., assignors to Dreis & Krump Mfg. Co., Ill.

Filed Oct. 7, 1977, Ser. No. 840,315
Int. Cl.² B21D *5/02*
U.S. Cl. 72—21 **17 Claims**



1. In a press brake of the type having a frame, a bed and a ram constrained to reciprocate along a defined operating path toward and away from said bed, a control and actuator system for moving said ram from a first position to a second predetermined position along said operating path, comprising, in combination:

drive means for driving said ram along said operating path in response to an applied analog control signal, said drive means comprising a hydraulic actuator system associated with said ram and having at least one servo-vale proportionally responsive to said applied analog control signal for modulating the flow of hydraulic fluid in said actuator system;

ram position sensing means providing an output signal indicative of the instantaneous position of said ram;

control means responsive to said position-indicative output signal for generating a ram profile command signal;

tachometer means cooperatively associated with said ram for providing a velocity signal indicative of the velocity of said ram; and

means for combining said velocity signal with said command signal to develop a control signal for application to said servo valve whereby said ram is positioned in accordance with said ram profile command signal.

4,148,204

PROCESS OF MECHANICALLY SHAPING METAL ARTICLES

Richard Dötzer, and Klaus Stöger, both of Nüremberg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 691,707, Jun. 1, 1976, Pat. No. 4,101,386, which is a division of Ser. No. 300,906, Oct. 26, 1972, Pat. No. 3,969,195, which is a continuation-in-part of Ser. No. 249,276, May 1, 1972, abandoned. This application Jan. 27, 1978, Ser. No. 873,080
Claims priority, application Fed. Rep. of Germany, May 7, 1971, 2122610
Int. Cl.² B21C *23/24, 43/00*
U.S. Cl. 72—39 **2 Claims**

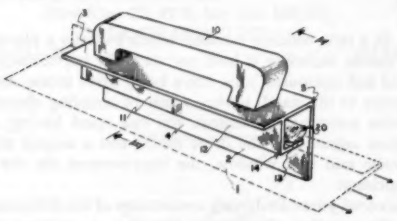
1. In a process of mechanically shaping metal articles by drawing, embossing, extrucing pressing, punching, rolling, squeezing and stamping, the improvement of pre-treating, prior to said shaping, the surface of said article by impinging with an anhydream, aprotic liquid against the surface of said article by falling drops for the purposes of removing scale and exposing bright metal, and subsequently electroplating, said article with aluminum, cadmium, indium or zinc of the highest purity in an aprotic organo-metal liquid electroplating electrolyte essentially devoid of water and molecular oxygen.

4,148,205

REVERSE BENDING TOOL

Richard L. Boysen, 100 County Rd., Simsbury, Conn. 06070

Filed Apr. 28, 1978, Ser. No. 900,987
Int. Cl.² B21D *5/08*
U.S. Cl. 72—176 **2 Claims**



1. A reverse bending tool for bending a workpiece bent at a substantially right angle to a reverse curve, said reverse bending tool comprising

a support angle iron having first and second plates joining each other at right angles along a length edge of each, each of said plates having an inner surface and an outer surface, each of the first and second plates having a predetermined width;

a handle affixed to the outer surface of the first plate of the support angle iron;

a guide angle iron having first and second plates joining each other at right angles along a length edge of each, each of said plates having an inner surface and an outer surface, each of the first and second plates of the guide angle iron having a width smaller than the predetermined width, said guide angle iron extending from the support angle iron with the first plate of said guide angle iron extending substantially perpendicular from the inner surface of the first plate of said support angle iron in spaced relation with the inner surface of the second plate of said support angle iron and the second plate of said guide angle iron extending substantially perpendicularly to the second plate of said support angle iron but spaced from the inner surface of the second plate of said support angle iron by a gap whereby said support and guide angle irons enclose a space of substantially rectangular cross-section therebetween; and

a shaping member secured in the space between said support

and guide angle irons, the workpiece being drawn between the shaping member and the inner surfaces of the second plates of said support and guide angle irons.

4,148,206

TUBE WELDING MACHINE WITH EXCHANGEABLE ROLLS

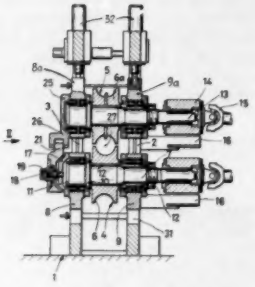
Hans Meurer, Monchen-Gladbach; Josef Jordans, Kleinenbroich, and Gerhard Henreich, Viersen, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 27, 1977, Ser. No. 864,772

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1976, 2659763

Int. Cl.² B21B *31/08*

U.S. Cl. 72—239 **10 Claims**



1. In a tube welding machine which includes a plurality of roll stands, including at least one stand for horizontally journalled and contoured rolls, there being drive means disposed adjacent to the stand, having a pair of coupling elements to provide rotational movement, the one stand having a first window adjacent to the drive means and a second window opposite said first window, the improvement for the stand comprising:

universal joint-like driving connections of the drive means to the coupling elements so that the connections can be maintained for different vertical dispositions of the coupling elements;

a pair of shafts each with means for releasable connection to the coupling elements of the pair and permitting disconnection therefrom by axial displacement;

two pairs of mounting elements respectively for journalling the shafts of the pair in horizontal dispositions;

two contoured rolls respectively secured to the shafts;

each shaft with the respective one of the rolls and the respective one of the pairs of mounting elements constituting a disassembleable sub-assembly, there being two sub-assemblies accordingly, the two sub-assemblies being removeable and insertable into the stand through the second windows;

means for establishing elevated positions of the two subassemblies from which the two sub-assemblies can be lowered for concurrent lateral removal through said second window;

holder means adjacent to the first window, and having dispositions corresponding to a lower level for the shafts for the removal, for receiving the coupling elements upon lowering said sub-assemblies, said coupling elements remaining in said holder means upon removal of said subassemblies through the second window;

means for interconnecting the two sub-assemblies; and

means for releasably axially locking at least one of the mounting elements to the stand adjacent to the second window.

4,148,207

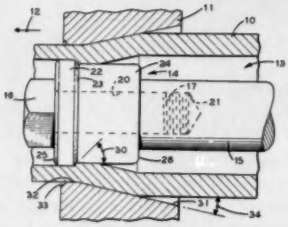
DRAWING TECHNIQUE

Paul E. Stump, Beaver Falls, Pa., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,288

Int. Cl.² B21C *3/16*

U.S. Cl. 72—283 **11 Claims**



1. An improved method of cold drawing a tube shell to be worked through an apparatus having a die opening provided with an approach zone and a cylindrical die land which comprises: positioning the tube shell within the die opening; contacting the exterior of the tube shell with at least part of the surface of the die opening; contacting the interior of the tube shell within the die opening with a mandrel plug having a first cylindrical working section disposed within the tube shell within the die land and angularly joined to a second smaller cylindrical working section disposed within the tube shell at least partly within the die land, the first cylindrical working section being further disposed on the exit side of the die opening; and axially drawing the tube shell to reduce its diameters and thickness.

4,148,208

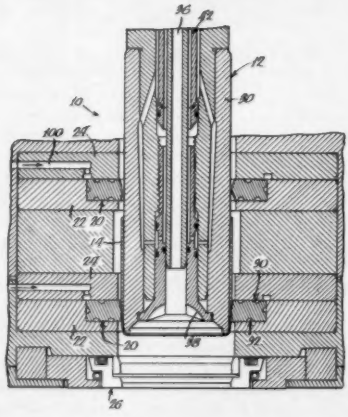
METHOD AND APPARATUS FOR IRONING CONTAINERS

Edward G. Maeder, Minnetonka, Minn., assignor to National Can Corporation, Chicago, Ill.

Filed Oct. 11, 1977, Ser. No. 840,519

Int. Cl.² B21D *22/20*

U.S. Cl. 72—342 **24 Claims**



1. In an ironing process for making a drawn and ironed container from a circular metal blank by converting said blank into a cup, placing said cup on a punch axially aligned with an ironing die, and moving said punch and said ironing die relative to each other to reduce the wall thickness of the sidewall

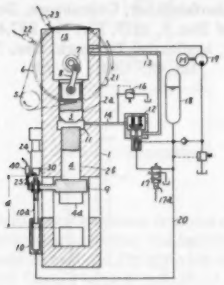
of said cup and produce an ironed container, the improvement comprising flowing a fluid medium through said punch and maintaining the fluid medium at a predetermined temperature above the initial ambient temperature of said cup to maintain said punch at a predetermined temperature.

4,148,209

FORGING PRESS

Michio Bessho, Hyogo, Japan, assignor to Kawasaki Yukoh Kabushiki Kaisha, Hyogo, Japan

Filed Apr. 7, 1978, Ser. No. 894,558
Int. Cl.[2] B21J *7/28*
U.S. Cl. 72—441 **2 Claims**



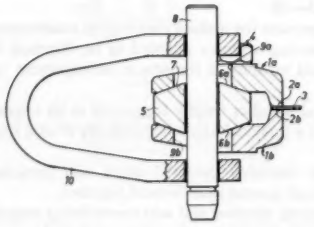
1. In a forging press having a pump ram inserted into the upper part of a cylinder within a frame, a press ram into the lower part thereof, and a cavity filled with working oil provided between both parts of the cylinder for transmitting the mechanically given reciprocating motion of the pump ram to the press ram by the working oil, said forging press comprising a stopper provided outside the frame for mechanically controlling the upper limit position in reciprocating motion of the press ram and enabling an adjustment of the position where the stopper and corresponding portion of the press ram come into contact with each other, from outside during operating the press.

4,148,210

SELF-TIGHTENING PULL CLAMP FOR ATTACHING TO SHEET METAL FLANGES AND THE LIKE

Bengt A. Björk, Eskilstuna, Sweden, assignor to AB Nike Hydraulik

Filed Aug. 10, 1977, Ser. No. 823,378
Claims priority, application Sweden, Aug. 17, 1976, 7609165
Int. Cl.[2] B21D *1/12*; B25B *5/08*
U.S. Cl. 72—457 **10 Claims**



1. A self-tightening clamp assembly for providing clamping engagement with sheet metal flanges and the like, and comprising:

first and second separate clamping jaw members each having a first end portion extending substantially parallel to one another with said first end portions being selectively positioned on opposite sides of said flange;

at least two spaced fastener means interconnecting said first and second jaw members for selectively drawing said first end portions into abutting contact with said flange;

self-tightening actuator assembly positioned between said first and second clamping jaw members and slidably engageable with opposed inner surfaces formed on each of said jaw members, said actuator having an aperture extending completely therethrough;

a pair of further apertures extending through said first and second jaw members, each of said further apertures having a diameter larger than a diameter of said aperture formed through sad actuator assembly, with all of said apertures being aligned with one another;

connecting means extending through said aligned apertures for sliding said actuator assembly substantially away from said first end portions of said jaw members through an arc of at least 150° as measured about said jaw members; and

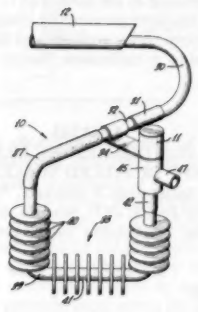
wedge means formed along portions of opposed inner jaw surfaces and abutting surfaces of said actuator assembly for progressively increasing the clamping pressure of said first end portions against said flange responsive to the distance said actuator assembly moves.

4,148,211

SAMPLING SYSTEM FOR ENGINE EXHAUST GAS ANALYSIS APPARATUS

Kenneth B. Sawa, Yorba Linda; Willis M. Peek, and John D. Blanke, both of Fullerton, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 22, 1978, Ser. No. 889,452
Int. Cl.[2] G01N *27/50*
U.S. Cl. 73—23 **8 Claims**



1. In apparatus for analyzing the exhaust gas of a motor vehicle, said apparatus including a gas sensor and means for sampling a portion of said exhaust gas and conducting said portion to said sensor, the improvement wherein said conducting means comprises:

first heat exchange means, said sensor being mounted on said first heat exchange means;

first conduit means for conducting said exhaust gas portion to said first heat exchange means for heating same and said sensor mounted thereon;

second heat exchange means for cooling exhaust gases;

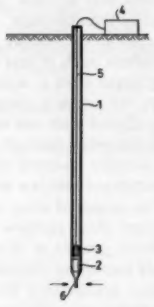
second conduit means for conducting said exhaust gas portion from said first heat exchange means to said second heat exchange means for cooling same; and

third conduit means for conducting said cooled exhaust gas portion from said second heat exchange means to said sensor.

4,148,212
METHOD AND DEVICE FOR DETERMINING THE PORE WATER PRESSURE IN A SOIL

Bengt-Arne Torstensson, 34 Hojdvagen, Vallentuna, Sweden

Continuation of Ser. No. 691,106, May 28, 1976, abandoned.
This application Oct. 21, 1977, Ser. No. 844,338
Int. Cl.[2] G01M 3/00
U.S. Cl. 73—38 4 Claims

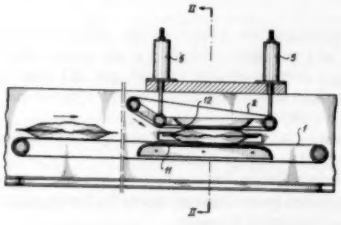


1. Method of determining the pore water pressure in a soil, characterized by the following steps:
(a) installing at the required level a water-filled tube bearing a pore pressure sound at its lower end and said pore pressure sound bearing a filter through which the pore pressure in the soil is conveyed;
(b) lowering a measuring device down the tube and connecting said measuring device to said pore pressure sound;
(c) allowing the pore pressure to stabilize and then taking a reading which represents the pore pressure in the soil;
(d) disconnecting said measuring device from said pore water sound and then taking a reading which represents the water pressure in the tube; and
(e) calculating the pore pressure by comparison of the readings for the pore water pressure and the water pressure in the tube, using a calibration factor for the measuring device.

4,148,213
APPARATUS FOR DISCARDING LEAKY PACKAGES FROM A ROW OF FILLED SEALED PACKAGES

Bouwe Prakken, Spijkerlaan 9, Kamerik, Netherlands

Filed Jun. 9, 1977, Ser. No. 805,034
Claims priority, application Netherlands, Jun. 9, 1976, 7606232
Int. Cl.[2] G01M 3/04
U.S. Cl. 73—45.4 4 Claims

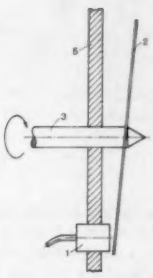


1. Apparatus for discarding leaky packages from a row of filled sealed packages on a conveyor belt comprising means for exerting pressure on the packages while on the belt and means for removing packages from the belt which appear to be leaky when subjected to said pressure, wherein said means for exerting pressure comprises the conveyor belt and a member located above said belt that in cooperation exert pressure on a package on the belt, either one of said member or belt being movable with respect to the other and the smallest distance between said belt and said member being chosen so that only a tight package is clamped therebetween while a leaky package is not, and said means for removing the leaky packages comprises a nozzle that blows air against the packages in the space between said belt and member, whereby unclamped leaky packages will be removed from the conveyor belt.

4,148,214
APPARATUS FOR MEASURING THE VISCOSITY OR CONSISTENCY OF FLUIDS

Rud F. Madsen, Nakskov, Denmark, assignor to Aktieselskabet de Danske Sukkerfabrikker, Copenhagen, Denmark

Filed Dec. 5, 1977, Ser. No. 857,452
Claims priority, application Denmark, Dec. 7, 1976, 5496/76
Int. Cl.[2] G01N 11/10
U.S. Cl. 73—54 6 Claims



1. An apparatus for determining the viscosity or consistency of fluids, such as liquids, emulsions and suspensions, comprising a hydraulic pressure sensor means having a sensing area located in the fluid, and an impelling element which is likewise located in the fluid and is so shaped and subjected to movement in such a manner as to produce a periodically varying flow of fluid in a direction towards said sensing area of said pressure sensor means, thereby subjecting said pressure sensor means to periodical pressure variations, which are representative of the viscosity or consistency of the fluid.

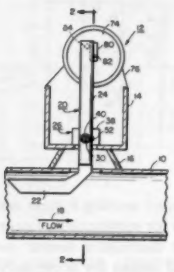
4,148,215
APPARATUS FOR MAKING RHEOLOGICAL MEASUREMENTS

Edward G. Hofstetter, Jr., Louisville, Ky., assignor to General Signal Corporation, Rochester, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,459
Int. Cl.[2] G01N 11/00, 11/14
U.S. Cl. 73—54 15 Claims

1. In apparatus for making rheological measurements upon a medium having a sensor adapted to be disposed in the flow path of said medium, a transducer arrangement which comprises
a flexural member fixedly supported at its opposite ends to define a torsional axis longitudinally of said flexural member,
a sleeve rotatably mounted about said torsional axis and disposed around said flexural member,
said flexural member and said sleeve being attached to each other in torque transmitting relationship,
said sensor also being connected to said sleeve and pivotally mounted about said torsional axis to import torsional flexure to said flexural member as a function of a rheological parameter of said medium, and
means attached to said flexural member for translating the torsional flexure thereof into an electrical signal.

9. In a consistency transmitter having a sensor which is supported in a housing on a flexural mount subject to torque from said sensor as it moves, an improved flexural mount and torque balance system which comprises a torsional transducer which provides said flexural mount, said transducer comprising a rod having a longitudinal axis, said rod being secured to said housing and to said sensor at positions spaced from each other along longitudinal axis such that torque from said sensor causes torsional flexure of said rod about said longitudinal axis,



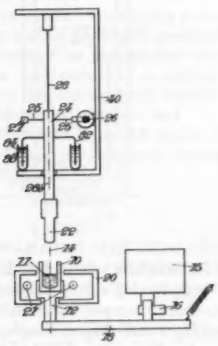
a plurality of strain gauge elements responsive to the torsional flexure of said rod secured to said rod between said positions, means also secured to said rod for applying torque to said rod to cause torsional flexure of said rod about said longitudinal axis, circuit means connected to said strain gauge elements for generating an electrical output representing consistency and corresponding to the torsional flexure of said rod, and a motor attached to said housing and responsive to said electrical output for operating said torque applying means to balance the torque from said sensor.

4,148,216

APPARATUS FOR DETERMINING THE VISCOUS BEHAVIOR OF A LIQUID DURING COAGULATION THEREOF

Mau T. Do, 28 bis Louis Hubert, 78140 Velizy; Serge H. A. Saffar, 3 Rue Ernest Billiet, 92600 Asnieres, and Daniel S. Meimoun, 99 Avenue de Fouilleuse, 92500 Rueil Malmaison, all of France

Filed Jan. 18, 1978, Ser. No. 870,529
Int. Cl.[2] G01N *11/10, 33/16*
U.S. Cl. 73—59 **11 Claims**



1. Apparatus for determining the viscous behaviour of a liquid during coagulation and lysis thereof and the like, comprising:

support means,

vertical torsion means having an end connected to said support means,

an oscillatory body suspended to the other end of said vertical torsion means, whereby said torsion means tends to return said body to a predetermined angular position about the axis of the torsion means,

means for supporting a receptacle for said liquid and for imparting to said receptacle an oscillatory movement of predetermined frequency and amplitude substnatially about said axis,

and amplitude measuring means for measuring the amplitude of the oscillations of said oscillatory body when immersed in said liquid,

said amplitude measuring means comprising:

electrical induction means having a movable element operatively connected to said body for oscillatory movement therewith and a stationary element, having output terminal means, for delivering to said terminal means, an electrical signal whose amplitude is representative of the amplitude of the oscillatory movements of said body,

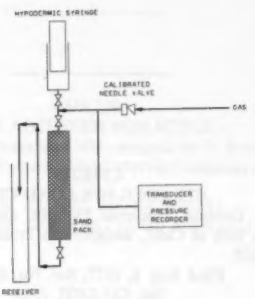
and means for measuring the amplitude of said electrical signal.

4,148,217

EVALUATING SURFACTANTS

Charles J. Engle, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 31, 1977, Ser. No. 847,345
Int. Cl.[2] G01N *15/00*
U.S. Cl. 73—60.1 **12 Claims**



1. A method for obtaining a measure of foam quality of foam-producing surfactants comprising the steps of:

(a) filling a sand pack with water;

(b) displacing the water out of the sand pack by gas flow;

(c) measuring the pressure drop across the sand pack during the water displacement by the gas flood;

(d) introducing a surfactant solution into the sand pack;

(e) displacing the surfactant solution by gas flow;

(f) measuring the pressure drop across the sand pack during the water displacement by the gas flood; and

(g) determining the ratio of the maximum differential pressure observed during the surfactant-gas flood to the maximum differential pressure observed during the water-gas flood.

4,148,218

APPARATUS FOR APPLYING TENSILE STRESS TO FIBER

Daniel H. Knowles, Painted Post, and William E. Lock, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 17, 1978, Ser. No. 897,193
Int. Cl.[2] G01L *5/04*
U.S. Cl. 73—829 **12 Claims**

1. Apparatus for applying tension to incremental lengths of a fiber comprising:

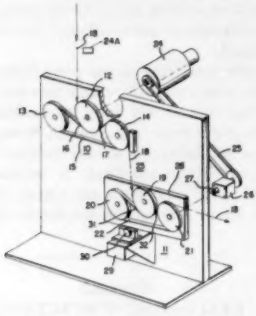
a first tractor assembly including at least one wheel,

means for driving said first assembly,

holding means for clamping said fiber against said wheel throughout an arc thereof,

a second tractor assembly including at least one wheel,

second holding means for clamping said fiber against said last-named wheel throughout an arc thereof, and



constant torque drive means for driving said second tractor assembly to apply tension to said fiber between the end of said arc on one wheel and the beginning of said arc on the other wheel.

4,148,219

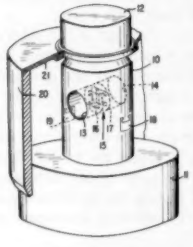
STRAIN GAGE LOAD CELL

Frank E. Golding, Hacienda Heights, and Emory W. Farr, Covina, both of Calif., assignors to Transducers, Inc., Whittier, Calif.

Filed Aug. 1, 1977, Ser. No. 820,449

Int. Cl.[2] G01L 1/22

U.S. Cl. 73—141 A **34 Claims**



31. In a load cell of the type having an elastic column subjected to loads along the axis of said column and strain responsive means responsive to strain on the surface of said column, the method of linearizing the output of said load cell with respect to load which comprises the steps of

(a) forming a transverse hole in said column so as to create a region on the surface of said column having an altered strain linearity with respect to load; and

(b) positioning at least one of said strain responsive means responsive to strains on the surface of said column in said region and parallel to said axis whereby the nonlinearity of the output of said load cell with respect to load will be substantially minimized.

4,148,220

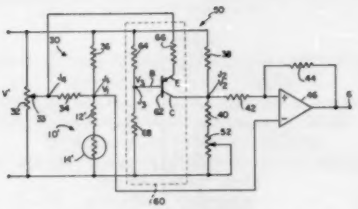
LINEARIZATION MEANS AND METHOD FOR A THERMISTOR TEMPERATURE SENSING SYSTEM

Walter R. Spofford, Bedford, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Oct. 12, 1977, Ser. No. 841,524

Int. Cl.[2] G01K 7/24

U.S. Cl. 73—362 AR **9 Claims**



1. In a temperature sensing system which includes a thermistor sensor, means for substantially linearizing at least one characteristic of said thermistor sensor over a limited range of temperatures, and means for accurately detecting at least one temperature selected from said limited range of temperatures, the improvement which comprises: a piecewise linearization means for extending said limited range of temperatures for which said characteristic is substantially linearized to at least one temperature extreme for said thermistor sensor wherein said piecewise linearization means is biased to activate only when a temperature within said temperature extreme is selected to be sensed.

4,148,221

APPARATUS FOR SAMPLING MOLTEN METAL

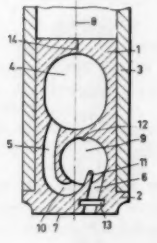
Friedrich Bardenheuer, Krefeld, and Gustav Kolb, Garbeck, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf and Gustav Kolb, Garbeck, both of, Fed. Rep. of Germany

Filed May 15, 1978, Ser. No. 905,992

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738568

Int. Cl.[2] G01N 1/12

U.S. Cl. 73—425.4 R **12 Claims**



1. Device for sampling molten metal, comprising:

a ceramic body having a first sampling chamber for obtaining a pin-shaped sample, and a second sampling chamber for obtaining a disk-shaped sample, and connected to the first chamber;

a mixing chamber in the body;

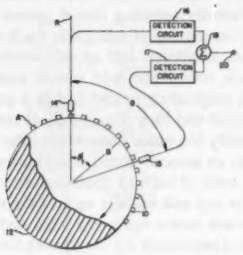
inlet duct means in the body leading from the outside into the mixing chamber and having a port in a lower portion thereof; and

outlet duct means having a port for leading from the mixing chamber adjacent to the port for the inlet duct and also in a lower portion of the mixing chamber, to the first sampling chamber.

4,148,222
APPARATUS AND METHOD FOR MEASURING TORSIONAL VIBRATION

John F. Wolfinger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,153
Int. Cl.[2] G01H 1/10
U.S. Cl. 73—650 9 Claims



1. Torsional vibration measuring apparatus comprising a plurality of circumferentially spaced elements adapted for movement with a rotating member, a probe located adjacent said rotating member for sensing passage of the elements and producing a first electrical signal representing the sensed passage of the elements and a detection circuit to which said electrical signal is applied for producing a first electrical output signal representing variations in the sensed passage of the elements, said first output signal including true components representing torsional vibrations of the rotating member and false components representing inhomogeneities in the elements, and means for eliminating false components of selected frequencies, said means including:

(a) a second probe located adjacent the elements and separated from a first probe by an angle θ (expressed in radians), said angle being determined in accordance with the relationship:

$$f_m = \frac{\pi}{\theta}(2m + 1)f_o$$

where:
f_m=frequencies of false components to be eliminated;
f_o=cyclic rate of rotation of the member;
m=an integer 0, 1, 2 . . . ;

(b) a second detection circuit for receiving a second electrical signal from the second probe and producing a second output signal including false components which are out-of-phase with false components of an output signal produced by said first detection circuit receiving the first electrical signal from the first probe; and

(c) means for electrically summing the output signals from the first and second detection circuits to eliminate the false components of frequencies f_m.

4,148,223
METHOD AND APPARATUS FOR MEASURING THE TEMPERATURE OF A GLASS CONTAINER

Francis J. Disinski, Reynoldsburg, Ohio, assignor to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 24, 1977, Ser. No. 780,891
Int. Cl.[2] G01K 7/02, 7/14
U.S. Cl. 73—359 R 14 Claims

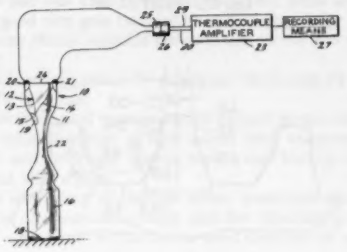
1. An apparatus for measuring the sterilization temperature of a container in a sterilizer comprising:

an ampul for sterile liquids having bottom and side portions formed from a continuous inside surface and an open end portion;

at least one pair of bare and substantially thin thermocouple lead wires secured together at one end in a junction and their junction secured in direct contact with said surface of said ampul;

a thermocouple amplifier;

means to connect said lead wires at the opposite end to said amplifier; and



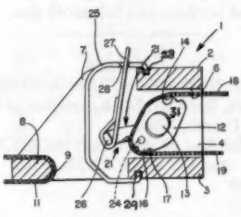
a recording means operatively connected to said thermocouple amplifier;

so that the surface temperature of said ampul can be measured as a function of time when said ampul is placed in said sterilizer.

4,148,224
BELT ADJUSTER BOX STYLE

Kenneth K. Craig, Riverside, Calif., assignor to H. Koch & Sons Division, Gulf & Western Manufacturing Company, Anaheim, Calif.

Filed Jul. 27, 1977, Ser. No. 819,581
Int. Cl.[2] F16H 7/08; F16G 11/00; A44B 11/12
U.S. Cl. 74—242.8 7 Claims



1. In a box style belt adjuster

an elongated box having a top, a bottom and end walls and having a passage therethrough to accommodate a belt,

a pivot shaft held in the end walls of the box

a cam on the pivot shaft within the box,

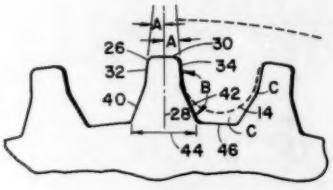
risers on the cam being spaced to a distance to provide between said risers and the respective top and bottom of the box clearances slightly less than the thickness of the belt around said cam whereby when the cam is turned so as to force the risers toward the respective top and bottom of said box said risers squeeze and hold said belt in the box against movement, and when said cam is turned to move said risers away from said top and bottom the belt is released for adjustment,

said cam having an axial hole therethrough upon said shaft and said hole being substantially oval thereby to permit self-adjustment of the cam to varying thicknesses of the belt.

4,148,225
BELT SPROCKET

John D. Redmond, Jr., Littleton, and Robert P. Tone, Englewood, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Oct. 31, 1977, Ser. No. 846,872
Int. Cl.[2] F16H 55/08
U.S. Cl. 74—243 R 11 Claims



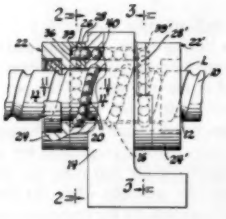
1. A sprocket having circumferentially spaced teeth that are axially aligned, the sprocket for use with positive drive belts of the type having teeth with oppositely facing curvilinear driving surfaces that convergingly extend from the roots of each belt tooth at opposite equal angles of about 15 degrees or less from a plane transversely normal to the longitudinal axis of the belt, wherein improvement in the sprocket comprises:

symmetrical sprocket teeth with each tooth having an axis, a tooth top land and an axial cross-section profile formed by oppositely facing driving surface portions for contacting portions of the belt on the belt teeth near the belt teeth roots, the driving surfaces of a sprocket tooth extending from the top land at an angle of about 15 degrees or less to the sprocket tooth axis, each driving surface of the sprocket tooth blending into an oppositely facing oblique surface at an angle of about 150 to about 170 degrees that provides a positive clearance between the sprocket tooth and side portions of a meshing belt tooth to direct egress of material away from the sprocket, the oblique surfaces define a sprocket tooth base that is wider than the sprocket tooth top land and bottom land portions between sprocket teeth providing positive clearance between the bottom land portions and belt tooth tips.

4,148,226
BALL NUT AND SCREW ASSEMBLY

Robert L. Benton, Bay City, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 22, 1977, Ser. No. 835,735
Int. Cl.[2] F16H 55/22, 27/02
U.S. Cl. 74—459 2 Claims

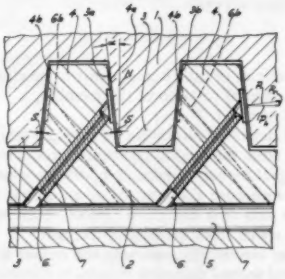


1. In a ball nut and screw assembly, an elongated screw having a helical groove extending along the outer peripheral surface thereof, a helical land interposed between the turns of said helical groove, a nut having an internal helical groove mounted on said screw, said helical grooves of said screw and nut being matched with each other to provide a helical race having a plurality of turns, a train of balls operatively mounted in said assembly and extending through said race to provide a drive connection between said nut and screw, an intermediate passage for said train of balls traversing the longitudinal dimension of said nut, said nut having guide track means for said train of balls formed in opposite ends thereof, each said guide track means extending radially outwardly from an associated end turn of said helical groove of said nut and terminating on said land of said screw, ball return fixture means secured to each end of said nut, each said ball return fixture means having radial and outwardly spiraling tunnel means for said train of balls leading from the end of said guide track means associated therewith to an associated end of said intermediate passage, said guide track means and said tunnel means forming ball passage means originating in said nut at a point of tangency with an associated end turn of said helical race and extending radially outwardly in a plane transverse to the longitudinal axis of said screw to an associated end of said intermediate passage to permit said train of balls to continuously circulate through said helical race and exit radially against the outer wall of one of said guide track means and away from said end turn of said helical groove of said screw for the smooth linear movement of said ball nut in response to rotation of said screw.

4,148,227
WORM AND WORM-RACK WITH HYDROSTATIC LUBRICATION

Heinz Neugebauer, Weidach, Fed. Rep. of Germany, assignor to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Bayern, Fed. Rep. of Germany

Continuation of Ser. No. 439,634, Feb. 4, 1974, abandoned, which is a continuation-in-part of Ser. No. 238,202, Mar. 27, 1972, abandoned. This application Oct. 7, 1977, Ser. No. 840,277
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1971, 2117491
Int. Cl.[2] F16H 57/04, 55/18, 1/04
U.S. Cl. 74—467 4 Claims



1. A worm and worm-rack having hydrostatic lubrication means therein, the teeth of said worm and worm-rack having a trapezoid section in cross-section and lubricating oil bore-holes which open into the zones between the tooth flanks of the worm and worm-rack and supplied with lubricating oil under pressure, said worm-rack being capable of very small movements toward and away from the axis of rotation of said worm in response to forces applied to said worm-rack which are at a right angle to said axis of rotation of said worm, comprising the improvement wherein the half-angle (α) formed between each of said tooth flanks and the line of action (N) to the axis of the worm is limited solely to the range of 6° to 10°, and wherein the lead angle (δ) is in the range of 2° to 10° whereby said very small relative movements between said worm and said worm-rack in response to forces applied to said worm-rack is minimized.

4,148,228

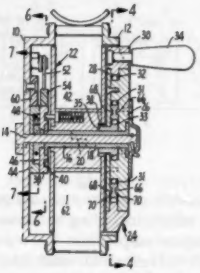
VARIABLE SPEED FISHING REEL

James W. Freeman, 690 Mesa Way, Richmond, Calif. 94085

Continuation of Ser. No. 715,230, Aug. 18, 1976, which is a continuation of Ser. No. 529,441, Dec. 4, 1974, abandoned. This application May 20, 1977, Ser. No. 798,826

Int. Cl.[2] F16H *1/28*

U.S. Cl. 74—789 **8 Claims**



1. A transmission comprising opposed casing members forming a cage, an outer ring gear member carried for rotation by said cage, a sun gear member carried for rotation by said cage, the outer ring gear and the sun gear being concentric to each other, an annular inner ring gear having gear teeth at its outer periphery and gear teeth at its inner periphery, the outer periphery being in mesh in a first zone with the outer ring gear member and the inner periphery being in mesh in a second zone with the sun gear, the two zones being 180° offset, guide means within said cage to maintain the eccentric position of said inner ring gear within said cage, said cage having a shaft affixed thereto, a wheel-like member sleeved on said shaft and rotatable relative to said shaft, and a two-way drive connection between said sun gear member and said wheel-like member.

4,148,229

OVERDRIVE DEVICE FOR AUTOMATIC TRANSMISSION

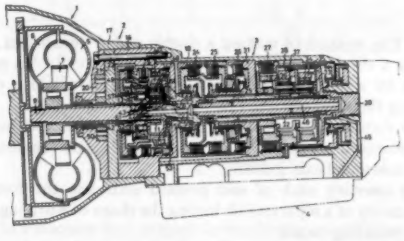
Koujiro Kuramochi; Kazuaki Watanabe, and Yukio Terakura, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Aug. 2, 1977, Ser. No. 821,077

Claims priority, application Japan, Apr. 5, 1977, 52-38145

Int. Cl.[2] F16H *1/28*

U.S. Cl. 74—801 **1 Claim**



1. An overdrive device for an automatic transmission of a motor vehicle comprising:

a fluid coupling-type torque converter;

an input shaft coupled to said torque converter;

a plurality of auxiliary transmissions each having at least one reduction gear ratio;

an output shaft coupled to said auxiliary transmissions;

a carrier rotatably supporting planetary pinions through the medium of a plurality of pinion shafts and needle bearings positioned in side-by-side relationship provided in the axial direction of said input shaft;

a spacer positioned between said needle bearings;

a planetary gear including a sun gear and a ring gear meshing with said pinions rotatably supported in said carrier, with said sun gear concentric with said input shaft and with said ring gear coupled to said output shaft;

a one-way clutch included between said carrier and said sun gear;

hydraulic source means for supplying lubricating oil for said needle bearings;

first lubricating oil passage means formed in said carrier in the radial direction of said output shaft communicating with said hydraulic source means and having one end closed with a plug;

second lubricating oil passage means positioned inside said spacer communicating with said first lubricating oil passage means and formed in the axial direction of said pinions;

third lubricating oil passage means communicating with said second lubricating oil passage means discharging lubricating oil to said bearings and having a diameter which at one end is enlarged to loosely receive a plug, with adjoining means being provided to prevent said plug from being removed therefrom; and

hydraulic control means operating to control the pressure of said lubricating oil.

4,148,230

EMISSION CONTROL SYSTEM DEPENDENT UPON TRANSMISSION CONDITION IN A MOTOR VEHICLE

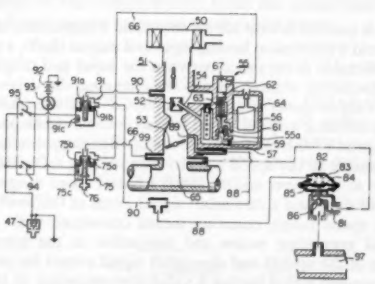
Masayuki Kodama, Tokyo, and Toshio Kobayashi, Mitaka, both of Japan, assignors to Fuji Heavy Industries Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1977, Ser. No. 860,575

Claims priority, application Japan, Dec. 14, 1976, 51-149355; Dec. 14, 1976, 51-166676[U]; Dec. 14, 1976, 51-166677[U]

Int. Cl.[2] B60K *41/18;* F02B *29/00, 33/00*

U.S. Cl. 74—859 **6 Claims**



1. An emission control system in a motor vehicle having an engine and equipped with an automatic transmission having a band servo wherein a brake band may make a part of planetary gear units tightened or released by the action of a servo piston, said emission control system comprising:

switching means for detecting the tightening state of the brake band where said transmission is in the intermediate driving range and for detecting the releasing state of the brake band where said transmission is in the low and the high driving ranges;

a first vehicle speed switch for detecting whether the vehicle speed is equal to or higher than a first predetermined value;

a second vehicle speed switch for detecting whether the vehicle speed is equal to or higher than a second predetermined value which is higher than said first predetermined value;

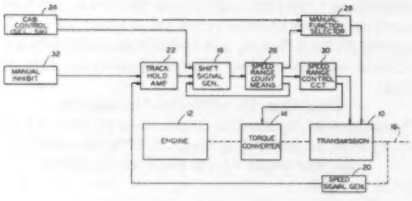
means for enriching the air-fuel ratio of an air-fuel mixture in an intake passage of the engine, and

exhaust gas recirculating means for recirculating a part of the exhaust gas into said intake passage, said switches and means being so arranged that; when said first vehicle speed switch detects the vehicle speed which is lower than said first predetermined value, the air-fuel ratio of the air-fuel mixture in the intake passage is set richer than the stoichiometric air-fuel ratio by means of said enriching means and at the same time the exhaust gas recirculation ratio is made high by means of said exhaust gas recirculating means; when said switching means has detected the low and high driving ranges, and said first vehicle speed switch has detected the vehicle speed which is equal to or higher than said first predetermined value, the exhaust gas recirculation ratio is made low, and; when said switching means has detected the low and high driving ranges, and said second vehicle speed switch has detected the vehicle speed which is equal to or higher than said second predetermined value, the enriching action of said means for enriching the air-fuel ratio is released.

4,148,231
AUTOMATIC TRANSMISSION CONTROL

Gilbert E. Redzinski, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 25, 1977, Ser. No. 790,218
Int. Cl.[2] B60K *41/06*
U.S. Cl. 74—866 **29 Claims**



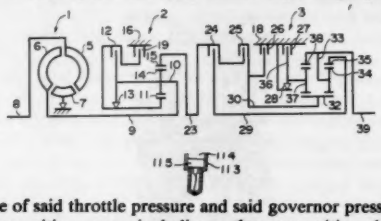
1. A control system for an automatic transmission of a vehicle, said transmission having input and output shafts, a plurality of selectable drive ratios between the input and output shafts and including shifting means for changing the drive ratio, a speed signal generating means coupled with the transmission for producing a speed signal having a value corresponding to the speed of the output shaft, a shift signal generating means responsive to the speed signal for producing an upshift signal event at the upper end of each of plural speed ranges of said output shaft and a downshift signal event at the lower end of each speed range, counting means connected with the shift signal generating means and responsive to the number and sense of the upshift and downshift signal events for producing a command signal having a value corresponding to the speed range, and speed range control means connected with the counting means and responsive to said command signal for controlling said shifting means in accordance with the command signal.

4,148,232
OIL PRESSURE CONTROL MEANS FOR AN AUTOMATIC TRANSMISSION

Shigeru Moriya, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Apr. 27, 1977, Ser. No. 791,578
Claims priority, application Japan, Dec. 29, 1976, 51-159962
Int. Cl.[2] B60K *41/10*
U.S. Cl. 74—869 **7 Claims**

1. An oil pressure control means for an automatic transmission having a fluid torque converter and a speed shift gear means including a speed shift gear mechanism and a plurality of friction engaging means, said oil pressure control means comprising a source of oil pressure, a line pressure regulating valve which generates a line pressure from the oil pressure of said source, a throttle pressure regulating valve which generates a throttle pressure corresponding to the throttle opening, a governor valve which generates a governor pressure corresponding to the vehicle speed, a manual shift valve for shifting speed ranges, and a plurality of speed shift valves which change over the supply of oil pressure to said friction engaging means of said speed shift gear means depending upon the

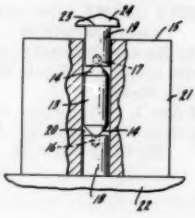


balance of said throttle pressure and said governor pressure, a thermo-sensitive means including a thermo-sensitive element for sensing the engine temperature and connected to make one of said speed shift valves which establishes the highest speed stage incapable of establishing that highest speed stage when the engine temperature is below a predetermined value and to make said one speed shift valve capable of establishing the highest stage when the engine temperature is above a predetermined value.

4,148,233
METHOD OF MAKING A DOUBLE-ENDED HEADING PUNCH

William H. Wang, Burlington, Canada, assignor to Procor Limited, Oakville, Canada

Division of Ser. No. 812,928, Jul. 5, 1977, Pat. No. 4,094,185.
This application Mar. 29, 1978, Ser. No. 891,241
Int. Cl.[2] B21K *5/20*
U.S. Cl. 76—101 R **2 Claims**



1. The method of making a double-ended punch that produces a driving-tool receiving recess in the end of a metal blank by a single blow delivered at room temperature, comprising the steps of:

(a) forming a steel right circular cylindrical rod having identical pointed conical ends centered on the longitudinal centroidal axis thereof;

(b) inserting each of said pointed ends into the forming cavity of a separate hob having the shape of a driving-tool receiving recess;

(c) holding said rod and said hobs in longitudinal alignment in a cylindrical hole in a metal support, with one end of one of said hobs extending beyond said support;

(d) simultaneously pressing both of said hobs against said pointed ends so as to produce a double-ended punch by a single press stroke; and

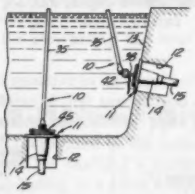
(e) removing said hobs from said ends; centerless grinding the outside of said cylindrical punch; and heat treating said punch.

4,148,234

TOOL KIT FOR SERVICING TURBO HEADS

Wayne D. Steimle, 2085 Vista, Arcadia, Calif. 91006

Filed Nov. 28, 1977, Ser. No. 855,207
Int. Cl.[2] B25B *9/00*; A47F *13/06*
U.S. Cl. 81—3 R 6 Claims



1. A tool kit for performing service operations on a swimming pool turbo head of the type having a bayonet disconnect holding said turbo head detachably installed to a swimming pool water supply pipe and of the type having a rotary indexing water outlet port actuatable in steps by a reciprocal plunger housed interiorly of the turbo head, said tool kit comprising: handle means manipulatable from a position at pool side and having separable coupling means at one end thereof;

first tool means detachably connected to said coupling means and provided with gripping means telescopically engageable with the outer end of said turbo head whereby said handle means can be manipulated to disconnect and reconnect the bayonet connection of said turbo head for the servicing thereof; and

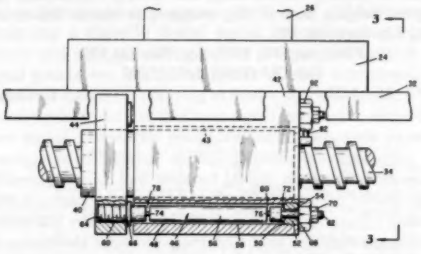
second tool means detachably connected to said coupling means in lieu of said first tool means and including pin means for engaging and depressing said spring-biased plunger of said turbo head to index said water outlet port to a different water-dispensing position each time said plunger is depressed.

4,148,235

COUPLING FOR JOINING A BALL NUT TO A MACHINE TOOL CARRIAGE

Howard L. Gerth, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 28, 1978, Ser. No. 891,097
Int. Cl.[2] B23B *21/00*
U.S. Cl. 82—21 R 5 Claims



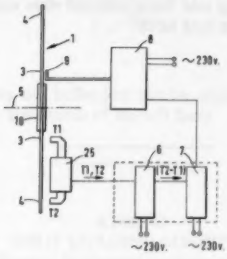
1. In a machine tool utilized for machining a workpiece and comprising at least one carriage for supporting one of a tool and a workpiece, slide means for movably supporting the carriage, a ball nut, means for joining ball nut to the carriage, a lead screw engaging the ball nut for axially displacing the carriage along said slide means in reponse to rotation of the lead screw in said ball nut, said means for joining the ball nut to said carriage comprising a plurality of elongated bolt means secured at opposite ends thereof to said ball nut and said carriage for coupling said ball nut to said carriage, and hinge means on said bolt means intermediate said opposite ends which flex upon lateral movement of said ball nut due to wobble in the lead screw during rotation thereof for inhibiting the transferrence of the latter movement to said carriage.

4,148,236

METHOD AND A DEVICE FOR CONTROLLING THERMAL STRESSES IN A POWER SAW BLADE

Sindre Holoyen, Li, Norway, and Clayton D. Mote, Jr., Berkeley, Calif., assignors to Norsk Treteknisk Institutt, Oslo, Norway

Filed Dec. 21, 1977, Ser. No. 862,958
Claims priority, application Norway, Dec. 21, 1976, 764321
Int. Cl.[2] B26D *7/10*
U.S. Cl. 83—74 6 Claims



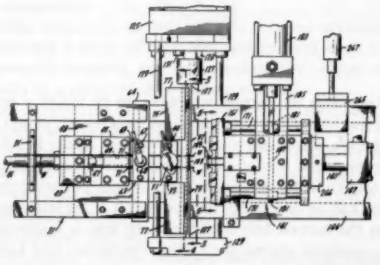
2. A device for controlling thermal stresses in a power saw blade comprising a saw blade having teeth at an edge thereof, a temperature sensor disposed in a zone on the saw blade near the teeth of the blade and at least one other temperature sensor disposed in a zone or zones spaced from the teeth and said first zone; a comparator for comparing the measured temperature difference(s) with the predetermined, desired temperature difference(s); and one or more heat generators controlled by the result(s) of the comparison(s) from the comparator for controlled heat supply to one or more of the zones.

4,148,237

TERMINAL FORMING AND INSTALLING APPARATUS

Maurice H. Brown, 11655 S. Mayfield, Worth, Ill. 60482

Continuation-in-part of Ser. No. 738,639, Nov. 3, 1976, Pat. No. 4,068,367. This application Nov. 9, 1977, Ser. No. 849,848
Int. Cl.[2] B26D *7/00*
U.S. Cl. 83—78 5 Claims



1. A wire shearing mechanism for forming at least one terminal from an elongated length of wire, said shearing mechanism including:

a wire die holder,

a channel formed in said wire die holder,

an elongated slot formed in the base of said channel,

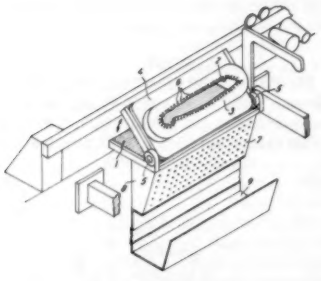
a slide positioned in said elongated slot and spring biased towards one end of said slot,
a socket carried by said slide,
an elongated fixed socket formed at the opposite end of said elongated slot,
a wire die removably seated in said channel with a portion thereof extending beyond said wire die holder,
a blade receiving channel formed in the face of the wire die and opening in a direction away from the wire die holder,
at least one wire passage adapted to receive said elongated length of wire formed in the portion of said wire die extending beyond said wire die holder,
an anvil fastened to the wire die adjacent said wire passage,
a blade slidably mounted in the wire die channel for reciprocal movement towards and away from said anvil and across said wire passage, and
means connecting said blade and said slide socket to return said blade from said anvil.

4,148,238

WRAPPER ROLLING MACHINE FOR CIGARS AND SIMILAR TOBACCO PRODUCTS

Niels E. Mortensen, Slagelse; Bent E. Christiansen, Klarup, and Ian Kjaer, Hadsund, all of Denmark, assignors to A/S Skandinavisk Tobakskompagni, Denmark

Filed Jul. 5, 1977, Ser. No. 812,677
Claims priority, application Denmark, Jul. 12, 1976, 3147/76
Int. Cl.[2] A24C *1/04*
U.S. Cl. 83—152 **5 Claims**



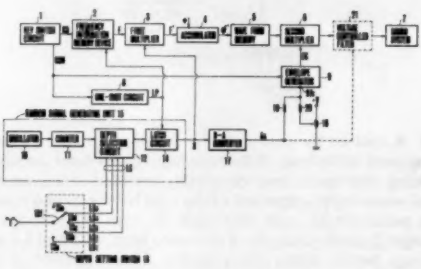
1. Apparatus for cutting wrappers, to be fed to a wrapper rolling machine, from unstripped tobacco leaves, comprising a cutting knife, a knife surrounding shield for firmly holding and supporting a first half of each tobacco leaf around the periphery of said knife during the cutting of at least one wrapper from said first half on one side of the central rib of the leaf, means for holding the second half of the tobacco leaf in a substantially planar condition during the cutting operation, said knife surrounding shield being mounted on top of a suction box structure presenting a perforated front wall forming said holding means, said shield being tiltable on a horizontal axis adjacent said front wall between a substantially horizontal operative position and an inclined release position, and said collecting means being a tray below said front wall, and means for collecting the second halves of the leaves in stack formation ready for a subsequent cutting of wrappers from these second halves.

4,148,239

ELECTRONIC MUSICAL INSTRUMENT EXHIBITING RANDOMMESS IN TONE ELEMENT

Akiyoshi Oya, and Shigeru Yamada, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 28, 1978, Ser. No. 928,837
Claims priority, application Japan, Jul. 30, 1977, 52-91598
Int. Cl.[2] G10F *1/02*
U.S. Cl. 84—1.03 **15 Claims**



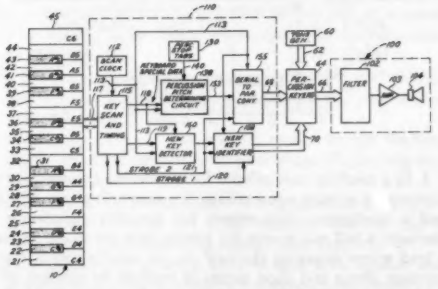
1. An electronic musical instrument comprising:
a key switch circuit means including a plurality of switches corresponding to the respective keys of an input keyboard and adapted to generate in response to the depression of each key a note designating signal and a timing signal corresponding thereto;
a random signal generator including,
a self-running counter for producing a multi-bit digital signal,
a latch circuit responsive to said timing signal and operative to latch the output of said self-running counter to provide a random signal; and
a musical tone signal generating means responsive to said note designating signal and said timing signal and operative to generate a musical tone signal having a pitch corresponding to a particular key depressed, said tone signal generating means including means responsive to said random signal and operative to modify at least one musical characteristic of said musical tone signal.

4,148,240

PERCUSSION SIMULATING TECHNIQUES

Douglas R. Moore, Vernon Hills, and Alberto Kniepkamp, Arlington Heights, both of Ill., assignors to Norlin Industries, Inc., Lincolnwood, Ill.

Filed Aug. 15, 1977, Ser. No. 824,933
Int. Cl.[2] G10H *1/02, 5/02*
U.S. Cl. 84—1.22 **17 Claims**



1. In an electronic musical instrument, improved apparatus capable of simulating the sound of a natural percussion instrument, capable of emitting sustaining tones with different funda-

mental pitches and a strike tone nonharmonically related to each sustaining tone, said apparatus comprising:

a plurality of playable keys, each key representing a different fundamental pitch of a sustaining tone to be sounded by the electronic musical instrument;

tone signal generator means for generating a plurality of tone signals, each tone signal representing a different one of said fundamental pitches;

output means for converting the tone signals to audible tones; and

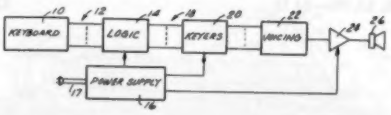
control means responsive to the depression of any one of said keys for enabling a first one of said tone signals corresponding to a first fundamental pitch represented by said one key to be transmitted to the output means for a first time period and for enabling a second one of said tone signals corresponding to a pitch nonharmonically related to the first fundamental pitch to be simultaneously transmitted to the output means for a second time period less than the first time period, whereby the first one of said tone signals results in a sustaining tone and the second one of said tone signals results in a strike tone associated with the sustaining tone, so that the percussion instrument can be simulated.

4,148,241

ELECTRONIC MUSICAL INSTRUMENT WITH MEANS FOR AUTOMATICALLY GENERATING CHORDS AND HARMONY

Gene S. Morez, Morton Grove, and Richard S. Swain, Des Plaines, both of Ill., assignors to Norlin Music, Inc., Lincolnwood, Ill.

Filed Aug. 26, 1975, Ser. No. 607,900
Int. Cl.[2] G10F *1/00*; G10H *1/02*
U.S. Cl. 84—1.03 **57 Claims**



1. In an electronic musical instrument having a plurality of function selecting switches, a keyboard, tone signal generating means responsive to operation of the keyboard keys, and an output system responsive to said tone signal generating means, the combination comprising: signal producing means responsive to the operation of one or more keys of said keyboard for producing a digitally coded signal indicative of a selected chord; said tone generating means including N separate tone signal generators, one for each note of an N note chord; first connector means for applying at least a selected portion of said coded signal to each of said tone signal generators, each of said tone signal generators producing an output tone signal, in response to the signal applied thereto, corresponding to a different note of said selected chord; and second connector means, connected to said function switches and to said output system and responsive at least in part to said function switches, for selectively applying the output tone signals from said tone signal generators to said output system.

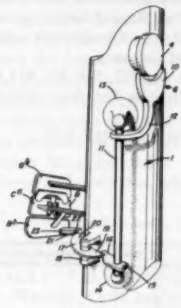
4,148,242

SAXOPHONE KEY

Theodore P. Woehr, Carnegie; Richard K. Kresic, Elizabeth, and James S. Sheppard, Carnegie, all of Pa., assignors to Brass and Woodwind Shop, Inc., Carnegie, Pa.

Filed Nov. 25, 1977, Ser. No. 854,772
Int. Cl.[2] G10D *7/08*
U.S. Cl. 84—385 R **4 Claims**

1. In a saxophone, a new key for playing the note B flat in the lower register with the left hand, said key being located adjacent the thumb rest and linked to the B flat key of the saxophone whereby the B flat key can be played either with the little finger or the thumb of the left hand.

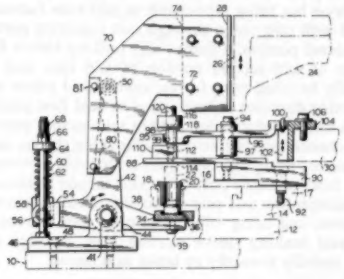


4,148,243

SHOT LOADING MACHINE

Albert W. G. Ervine, Bridgeport, assignor to Remington Arms Company, Inc., Stratford, Conn.

Filed May 23, 1977, Ser. No. 799,201
Int. Cl.[2] F42B *33/02*
U.S. Cl. 86—23 **9 Claims**



1. A machine for loading shot in successive layers into shotshells, comprising:

movable conveyor means constructed and arranged for receiving a series of shotshell casings with open mouths upwardly directed, and for indexing said casings successively to a series of shot-loading stations;

means constructed and arranged for simultaneously metering the individual charges of shot required for each of said layers and for dispensing said charges by gravity each at one said series of shot-loading stations, said metering means being located above said conveyor means to drop said charges each into a series of casings indexed to said shot-loading stations;

support means located beneath said conveyor means for supporting said casings for indexing by said conveyor means;

means drivingly connected with said support means constructed and arranged for repetitively reciprocating said support means through a stroke having a controlled vertical component of motion to shake the casings so as to cause the shot of each said individual charge to assume an orderly single-layer arrangement in the casings.

4,148,244

APPARATUS FOR BRAKING A FREE PISTON, WHICH IS DRIVEN AT HIGH ACCELERATION WITHIN A TUBE

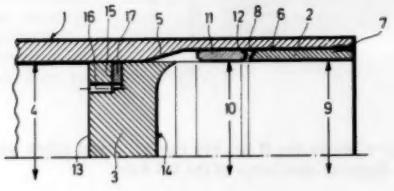
Werner Schnäbele, Wolfratshausen, and Paul von Malottki, Ottobrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschrankter Haftung, Fed. Rep. of Germany

Filed Nov. 3, 1977, Ser. No. 848,195

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1976, 2651167

Int. Cl.[2] F41F *3/02*

U.S. Cl. 89—1.701 6 Claims



1. An apparatus for braking a free piston which is driven at a high acceleration within a tube, particularly in a recoilless firearm, comprising a tube having a first portion of a first diameter, a second portion of a second diameter greater than the said first portion diameter and a transition portion between said first and second portions increasing in diameter from the first portion to the second portion, a free piston having substantially the same diameter as said first portion freely movable in said first portion, expanding member means including an expanding member carried by said piston and being confined by said first portion of said tube to substantially the diameter of said piston but being expandable in said tube outwardly when moved with said piston through said transition portion and to said second portion, a deformable braking sleeve fixed to the interior of said second portion of said tube and having an inwardly bevelled edge facing toward said piston and having an interior diameter at least equal to said first portion of said tube, a sleeve deformation ring in said second portion of said tube between said piston and said braking sleeve, said expanding member being movable outwardly with movement of said piston from said first portion to said second portion through a path intercepting said ring to move said ring against said braking sleeve and being effective during such movement to deform said braking sleeve starting from its edge facing said piston radially inwardly to brake said piston.

4,148,245

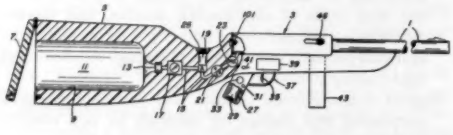
FLUID PROPELLANT PROJECTILE FIRING DEVICE

Robert D. Steffanus, and David R. Anderson, both of Pittsburgh, Pa., assignors to BTGCO, Coraopolis, Pa.

Filed Dec. 12, 1977, Ser. No. 859,868

Int. Cl.[2] F41F *1/04*

U.S. Cl. 89—7 10 Claims



1. A projectile firing device comprising:

a barrel;

a breechblock containing a firing chamber mounted on one end of the barrel with the firing chamber in communication with the barrel;

a bolt slidable within the firing chamber of the breechblock between an open position in which a projectile may be inserted into said one end of the barrel and a closed position in which the firing chamber is sealed;

a source of fluid propellant under pressure;

means connecting the source of pressurized fluid propellant with the firing chamber;

valve means in said connecting means for controlling the flow of said pressurized fluid propellant from said source to the firing chamber;

triggering means including a trigger, electrical means responsive to movement of the trigger to electrically ignite the propellant in the firing chamber, and means for enabling said electrical means;

means for generating a charging signal; and

control means responsive to pressure in the firing chamber below a predetermined value, said bolt being in the closed position and said charging signal, to open said valve means to permit flow of the pressurized propellant from said source into the firing chamber, and further responsive to pressure in the firing chamber above said predetermined value to close said valve means and activate said enabling means,

whereby generation of said charging signal with the bolt closed, charges said firing chamber with propellant and actuation of said trigger electrically ignites the propellant to drive the projectile down the barrel.

4,148,246

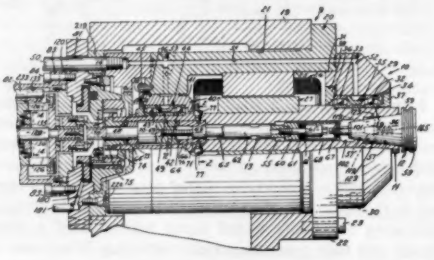
HIGH SPEED SPINDLE AND DRAW BAR ASSEMBLY

Charles R. Johnson, Howell, Mich.; John K. Forlow, Rockford, Ill.; Paul G. Black, Whitmore Lake, Mich.; William A. Mitchell, and John S. Clark, both of Springfield, Vt., assignors to Ex-Cell-O Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 767,013, Feb. 9, 1977. This application May 11, 1978, Ser. No. 904,825

Int. Cl.[2] B23C *5/26*

U.S. Cl. 90—11 D 12 Claims



1. In a machine tool having a rotary hollow spindle shaft with a draw bar assembly including a tool holder gripping means mounted in said spindle shaft for axial movement with respect thereto, between an operative position for retaining a tool holder or the like in said spindle shaft, and an inoperative position to permit a tool holder or the like to be removed from or inserted into the spindle shaft, the combination comprising:

(a) spindle shaft holding means for holding the spindle shaft stationary when the draw bar assembly is moved between said operative and inoperative positions;

(b) actuator means for moving said draw bar assembly between said operative and inoperative positions, wherein said actuator means includes:

(1) a drive motor;

(2) means for selectively connecting and disconnecting said drive motor and said draw bar assembly;

(c) said draw bar assembly is nonrotational relative to said spindle shaft and it includes a draw bar and a rotatable drive means for moving the draw bar axially in the spindle shaft;

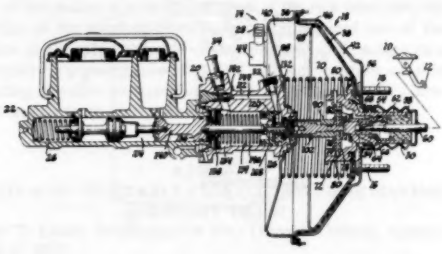
(d) said means for selectively connecting and disconnecting said drive motor and draw bar comprises a spline means for operative engagement with said draw bar assembly rotatable drive means, said spline means includes:
(1) a fixed spline driven member connected to said draw bar assembly rotatable drive means;
(2) a movable spline driver member for operative engagement with said fixed spline driven member;
(e) said spindle shaft holding means includes a collet means for selective engagement with the spindle shaft for holding it stationary, or for releasing the spindle shaft for rotation; said collet means includes:
(1) a fixed collet member having a plurality of collet fingers for gripping engagement with said spindle shaft;
(2) a movable collet clamp ring member for camming said collet fingers into a gripping engagement with said spindle shaft for holding it stationary;
(3) said movable collet clamp ring members are biased to inactive positions by spring means, and to active positions by fluid pressure means;
(f) said rotatable drive means includes:
(1) a threaded rear end shaft on the draw bar assembly, said threaded rear end shaft and cylindrical drive nut are provided with left hand threads;
(2) a cylindrical drive nut threadably mounted on said threaded rear end shaft and engageable by said draw bar assembly means; and
(3) the fixed spline member is integrally connected to said cylindrical drive nut.

4,148,247

DUAL POWER BRAKE BOOSTER

Malvin L. Schubert, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 31, 1977, Ser. No. 801,848
Int. Cl.[2] F15B *9/10, 11/16, 13/06*
U.S. Cl. 91—49 **2 Claims**



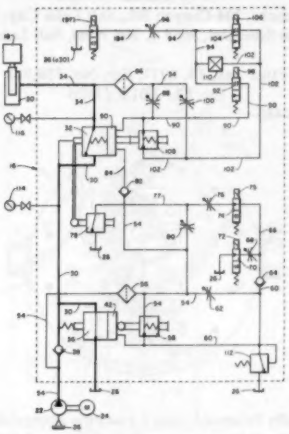
1. A dual power brake booster comprising:
a vacuum suspended first booster section having a first power wall, a first input member controlling power thereto, first and second concentric output members movable relative to each other, said first output member being movable by said first power wall and having reaction means transmitting reaction force to said first input member, said second output member being movable directly by said first input member;
and an open center hydraulic second booster section having a second power wall with a power pressure chamber on one side and an exhaust pressure chamber on the other side, a second input member formed as a part of said second output member and movable to control power to said second power wall, a third input member formed as a part of said first output member and movable therewith to directly move said second power wall by force from said first power wall, a third output member for actuating a master cylinder, and a reaction piston in said second input member sensing hydraulic pressure in said power pressure chamber applied to said second power wall and cooperating with said second input member to transmit reaction force from said second booster section to said first input member through said second input member and said second output member, said second input member including a control valve member and having areas continually exposed to hydraulic pressure downstream of said control valve member, said areas being so opposed as to substantially balance the forces acting thereon which are generated by the hydraulic pressure in said exhaust pressure chamber acting on said opposed areas;
said reaction forces from said first and second booster sections acting on said first input member to provide a combined reaction force indicative of the master cylinder actuation force delivered through said third output member.

4,148,248

HYDRAULIC VALVE CONTROL SYSTEM

Daniel W. Risk, Whittier, Calif., assignor to Maxton Manufacturing Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 557,418, Mar. 11, 1975, abandoned, Ser. No. 543,728, Jan. 24, 1975, abandoned, Ser. No. 439,466, Feb. 4, 1974, abandoned, which is a division of Ser. No. 332,986, Feb. 15, 1973, abandoned. This application Dec. 20, 1976, Ser. No. 752,060
Int. Cl.[2] F15B *11/08, 13/043*
U.S. Cl. 91—446 **15 Claims**



1. Hydraulic system for moving a load such as an elevator in up and down directions, comprising:
hydraulic jack means for moving a load in up and down directions,
tank means for holding a supply of hydraulic fluid,
pump means for forcing fluid from said tank means to said jack means under pressure,
a valve housing having a jack chamber connected to said jack means, a tank chamber connected to said tank means, and an intermediate chamber,
interconnecting means for interconnecting said pump means to said intermediate chamber to enable fluid flow from said pump means to said intermediate chamber,
bypass valve means for inerconnecting said intermediate chamber to said tank chamber for controlling upward movement of the load,
down valve means for interconnecting said jack chamber to said intermediate chamber for controlling downward movement of the load,
bypass actuating chamber means for controlling the position of said bypass valve means,
conduit means for interconnecting said pump means, said actuating chamber means and said tank means for supplying

fluid under pressure from said pump means to said actuating chamber means and for venting fluid from said actuating chamber means to said tank means, and including bypass control valve means in said conduit means for controlling the amount of fluid in said actuating chamber means thereby to control the position of said bypass valve means,

mechanical follower actuating means interposed between said bypass valve means and said bypass control valve means for actuating said bypass control valve means in response to bypass valve means portion,

build-up of pressure from said pump means effecting movement of said bypass valve means from open to partially closed position by supplying fluid to said actuating chamber means, and also effecting actuation of said bypass control valve means via said mechanical follower actuating means to a position of said bypass control valve means wherein at said partially closed position of said bypass valve means fluid is supplied to said actuating chamber means at a rate substantially less than during said movement,

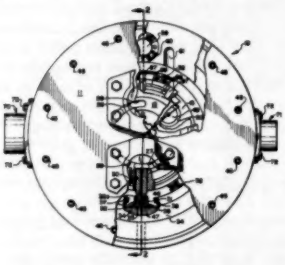
thereby effecting rapid sizing of said bypass valve means in the up mode of operation.

4,148,249

AXIALLY BALANCED, ADJUSTABLE VOLUME ROTARY MACHINE AND DRIVE SYSTEM UTILIZING SAME

Stephan J. Jacobs, 234 Canyon Rd., Salt Lake City, Utah 84103, and Alfonse Stuertzel, 3665 S. 300 West, Salt Lake City, Utah 84115

Filed Jan. 13, 1977, Ser. No. 758,943
Int. Cl.[2] F01B *13/06*
U.S. Cl. 91—485 **9 Claims**



1. An axially balanced rotary machine comprising

housing means having a central cavity and front and rear housing plates;

a control means having a central cavity and front and rear housing plates;

a control ring in the cavity;

means eccentrically mounting the control ring to swing in the cavity;

a rotor rotatable within the control ring; piston cylinders extending radially into the periphery of the rotor and spaced therearound;

a port extending transversely to each piston cylinder and extending from a face of the rotor into the cylinder, said ports being equidistant from the center of the rotor face;

piston means slidably positioned in each piston cylinder, said piston means being in centrifugal engagement with the control ring during rotation of the rotor;

a shaft journaled in the front and rear housing plates, connected for rotation with the rotor such that the rotor is movable axially with respect to said shaft and projecting through one of said plates;

a pair of diametrically spaced flow ports through the front housing, each said flow port terminating in an arcuate slot and said arcuate slots being in alignment with the ports through the face of the rotor;

pressure compensating means opposite each flow port whereby the pressure applied from each flow port is applied to opposite faces of the rotor, each said pressure compensating means comprising

at least one bore hole in the housing, piston means including a balancing piston slidable in said bore hole and a balancing shoe mounted by a ball and socket connection on a front end of the piston, passage means through the housing interconnecting each flow port with each bore hole opposite said flow port at a location behind said piston means, and

a thrust plate between the rotor and each piston, said thrust plate fitting flat against a rotor surface and loosely around the shaft and being engaged by said balancing shoe; and

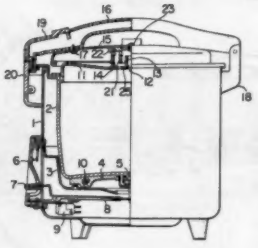
spring means biasing said piston means against said thrust plate and said thrust plate against said rotor surface.

4,148,250

MEANS FOR EXHAUSTING VAPORS FROM A STEAM COOKER

Yasumasa Miki, Daito, and Hideo Nakanishi, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 1, 1977, Ser. No. 812,424
Claims priority, application Japan, Jul. 13, 1976, 51-83628
Int. Cl.[2] A47J *27/08*
U.S. Cl. 99—403 **7 Claims**



1. A means for exhausting vapors from a steam cooker comprising

(a) an inner lid adapted to cover the top opening of a cooking pot to be placed in the main body of the steam cooker;

(b) a cylindrical member attached to said inner lid having a hole communicating with the interior of said cooking pot and protruding upwardly from said inner lid;

(c) an annular wall attached to said inner lid, said annular wall surrounding said cylindrical member;

(d) an outer lid of said cooking pot positioned above said inner lid;

(e) an annular vapor guide member provided on said outer lid at the side facing said inner lid, said vapor guide member being positioned between said cylindrical member and said annular wall and suspended in such a way that the lower end thereof is spaced from said inner lid and extends below the upper end of said cylindrical member;

(f) back flow holes provided in said inner lid between said cylindrical member and said vapor guide member, and

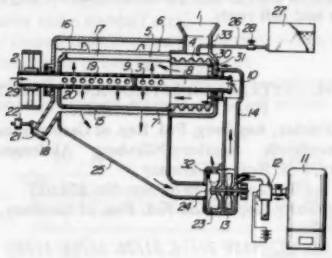
(g) exhaust openings for exhausting vapors provided in a portion of said outer lid between said vapor guide member and said annular wall.

4,148,251

RICE PEARLING MACHINE WITH HUMIDIFIER

Toshihiko Satake, 2-38, Saijonishihonmachi, Higashihiroshima-shi, Japan

Filed Mar. 7, 1977, Ser. No. 774,734
Claims priority, application Japan, Mar. 26, 1976, 51-33726
Int. Cl.[2] B02B *1/06, 3/04, 3/06, 3/12*
U.S. Cl. 99—519 **4 Claims**



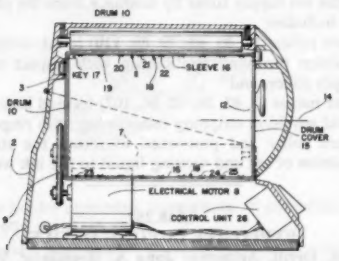
1. A rice pearling machine comprising a stationary perforated cylinder wall, a friction roller rotatably mounted in said cylinder wall, the space between said cylinder wall and said roller defining a pearling chamber, a rice inlet in communication with one end of said pearling chamber, a rice outlet formed at the other end of said pearling chamber, said roller having openings formed therein along its length and being mounted on a hollow shaft having a plurality of holes formed at the portion thereof closed by said roller, and means for supplying an air stream into said pearling chamber through said holes of said hollow shaft and said openings of said roller, the inside of said hollow shaft being partitioned into two spaces, and moisture generating means in communication with one of the spaces of said hollow shaft at the rice inlet side, the portion of the pearling chamber surrounding said one of the spaces at the rice inlet side of said hollow shaft acting as a humidifying-pearling chamber and another portion of said pearling chamber surrounding the other space of said hollow shaft acting as an airing-pearling chamber.

4,148,252

FRUIT AND VEGETABLE PEELING MACHINE HAVING A ROTARY DRUM

John T. Lewis, 34 Sunnycrest Dr., Ottawa, Ontario, Canada (K2E 5Y2)

Filed May 22, 1978, Ser. No. 908,216
Int. Cl.[2] A23N *7/02;* **A47J** *17/18*
U.S. Cl. 99—630 **1 Claim**



1. A fruit and vegetable peeling device, comprising

a casing having a base part and a cover part hingedly affixed to the base part to provide access to the interior of the casing;

a pair of spaced parallel rollers rotatably mounted in the base part of the casing;

an electric motor mounted in the base part of the casing and coupled to one of the rollers for rotating said roller;

A drum positioned on the rollers and extending therebetween in parallel relation therewith, said drum having an inner cylindrical suface and an open base end;

a third roller rotatably mounted in the cover part of the casing and abutting the drum in spaced parallel and opposed relation with the pair of rollers when the casing is closed whereby said drum is rotated about its axis by said motor when said casing is closed;

a cover removably covering the open base end of the drum; and

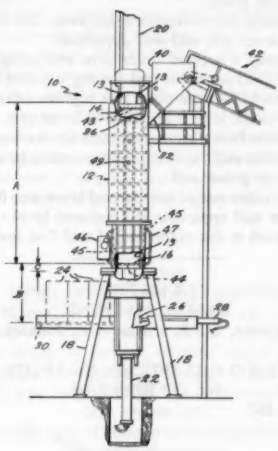
a sleeve coaxially removably mounted inside the drum for rotation with said drum, said sleeve having an inner surface and a plurality of sharp cutting projections extending from its inner surface whereby fruits and vegetables in said sleeve during rotation thereof are peeled by said projections.

4,148,253

VERTICAL CLOSED CHAMBER BALER

Wallace M. Thompson, and William D. Beeland, both of Cordele, Ga., assignors to American Hoist & Derrick Company, St. Paul, Minn.

Division of Ser. No. 717,872, Aug. 26, 1976, Pat. No. 4,102,259.
This application May 11, 1978, Ser. No. 905,174
Int. Cl.[2] B30B *15/08*
U.S. Cl. 100—97 **1 Claim**



1. In a machine for compressing particulate matter to form bales, said machine having a compression chamber forms by an enclosing side wall and end walls, at least one of said end walls being a movable ram, and a feed inlet chute having an inner end adjacent a feed aperture in the chamber side wall and an outer end into which particulate material can be delivered, the improvement which comprises a door slidable in its own plane, at the inner end of the chute, between a closed position in which the feed aperture is blocked and an open position, said door having a thickness defined by inner and outer surfaces which in the closed position of the door face toward and away from the chamber, respectively, said door having an edge which penetrates through a mass of particulate material residing in said chute and which seats in a frame as said door moves from an open position to a closed position, said edge having a relatively sharp inclined leading portion for penetration through the particulate material and an abrupt shoulder portion formed by at least one of said door surfaces and facing in the direction of movement of said door during closing, said shoulder portion cooperating with an anvil shoulder located at said frame for shearing particulate material which tends to

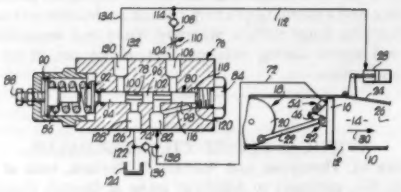
wedge between said door edge and said frame as said edge enters said frame.

4,148,254

PLUNGER DRIVE CONNECTION IN BALE DENSITY CONTROL SYSTEM

Kurt Graber, Moundridge; George Yatcilla, Newton, and Garold L. Fleming, Hesston, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Feb. 28, 1978, Ser. No. 882,133
Int. Cl.[2] B30B *1/06*
U.S. Cl. 100—179 **11 Claims**



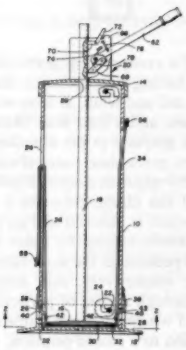
1. In a baler having a plunger and apparatus for reciprocating said plunger, the improvement comprising:
- means defining a fulcrum point connected with the plunger;
- means defining a first lever arm extending outwardly from said fulcrum point;
- a force-transmitting connection between the outer end of said first lever arm and said apparatus;
- means defining a second lever arm extending outwardly from said fulcrum point and having a radial length with respect to said fulcrum point that is greater than the corresponding radial length of said first lever arm,
- said lever arms being interconnected for transmitting force therebetween and for swinging movement in unison about said fulcrum point; and
- means at the outer end of said second lever arm for receiving force from said apparatus at a reduced level compared to that received at the outer end of said first lever arm.

4,148,255

BALING MACHINE

Alfred S. McQueen, 213 E. Unaka Ave., Johnson City, Tenn. 37601

Filed Oct. 27, 1977, Ser. No. 846,171
Int. Cl.[2] B30B *1/04*
U.S. Cl. 100—247 **10 Claims**



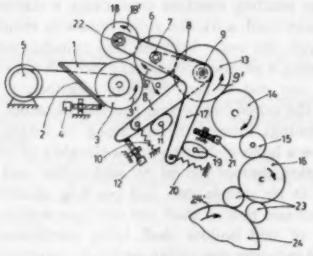
1. A compactor comprising an elongated cylinder removably secured to a base, at least two bail ports in an upper portion of the wall of said cylinder substantially oppositely, circumferentially disposed therethrough, a cap removably secured to the top of said cylinder, a prime mover secured to said cap, a piston slidable within said cylinder and having a connecting rod sufficiently long to extend a substantial portion of the length of said cylinder and connected to said prime mover, said prime mover being operable to force said piston axially through a portion of said cylinder to compact material therein and being further operable to allow release and axial withdrawal of said piston from its compacting position, and groove means in the bottom of said piston adapted for angular alignment with said bail ports.

4,148,256

INKING SYSTEM FOR LITHOGRAPHIC OFFSET PRINTING MACHINES

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Jan. 27, 1978, Ser. No. 872,913
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703425
Int. Cl.[2] B41F *31/14, 31/26, 35/04, 31/30*
U.S. Cl. 101—350 **21 Claims**



1. Inking system for a lithographic offset printing machine, said printing machine having a plate cylinder that is supplied with a wetting liquid, said inking system having
- a ductor roller (**3, 28, 50, 65, 80, 100**) and ink well means (**1, 2, 4; 25, 26, 27**) supplying ink to the ductor roller;
- an ink supply roller (**6, 29, 51, 66, 82, 103**) located in ink-accepting position with respect to the ductor roller and receiving ink from the ductor roller;
- ink transfer roller means in ink-transmitting relationship to the ink supply roller and transferring ink from the ink supply roller to the plate cylinder (**24**) of the printing machine,
- and comprising, in accordance with the invention,
- means removing ink-wetting liquid emulsion from the ink supply roller which builds up in operation of the machine on the ink supply roller by feedback from the plate cylinder including
- a return roller (**18, 40, 60, 70, 88, 110**) in ink-wetting liquid emulsion receiving relationship with respect to the ink supply roller, and
- stripper means (**3, 43, 56, 72, 86, 102**) located in ink-wetting liquid emulsion stripping relationship with respect to the return roller and positioned to return the stripped-off emulsion of ink and wetting liquid to the ink well means.

4,148,257

EXPLOSIVE CUTTING DEVICE

Larry M. Orrill, Arlington; John A. Regalbuto; Michael L. Wilson, both of Fort Worth, and Wayne L. Rutledge, Arlington, all of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Jul. 13, 1977, Ser. No. 815,346
Int. Cl.[2] F42B *3/08*
U.S. Cl. 102—24 HC **37 Claims**

1. An explosive cutting device for severing a chain link

surrounded by liquid, said explosive cutting device comprising:

a substantially linear upper member having a charge retaining area and a standoff area;

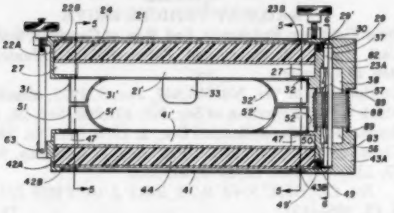
a linear shaped explosive charge contained within the charge retaining area of said upper member;

a pair of anti-jet distorsion members located on said upper member;

a substantially linear lower member having a charge retaining area and a standoff area;

a linear shaped explosive charge contained within the charge retaining area of said lower member;

a pair of anti-jet distorsion members located on said lower member juxtaposed from said pair of anti-jet distorsion



members located on said upper member, said pair of anti-jet distorsion members located on said upper member and said pair of anti-jet distorsion members located on said lower member defining an opening between said upper member and said lower member to receive said chain link therein with a portion of each anti-jet distorsion member of said pair of anti-jet distorsion members on said upper member and said pair of anti-jet distorsion members on said lower member confronting a portion of said chain link;

fastening means for securing said upper member to said lower member; and

means for detonating said linear shaped explosive charge within said upper member and said lower member.

4,148,258

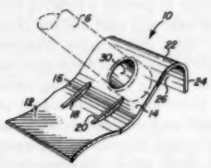
FLARE HOLDER APPARATUS

David F. Powers, 1240 E. Tuckey La., Phoenix, Ariz. 85014

Filed Feb. 14, 1977, Ser. No. 768,158

Int. Cl.[2] F42B *4/26*

U.S. Cl. 102—37.4 **10 Claims**



1. Flare holder apparatus, comprising, in combination:

a generally flat front plate;

intermediate plate means extending upwardly from the front plate and comprising a continuation of the front plate;

holder means secured to the intermediate plate means for holding a flare at an acute angle with respect to the front plate;

a back plate secured to the intermediate plate means and terminating in substantially the same plane as and remote from the front plate.

4,148,259

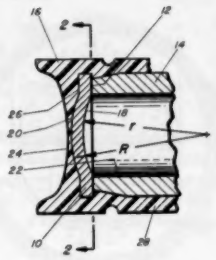
SABOT ASSEMBLY FOR A SUBCALIBER SPIN STABILIZED PROJECTILE

Ladd Yuhash, Budd Lake, N.J., and Gary W. Fischer, Bettendorf, Iowa, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1977, Ser. No. 838,781

Int. Cl.[2] F42B *13/16*

U.S. Cl. 102—93 **4 Claims**



1. An apparatus for launching a spin stabilized hypervelocity subcaliber tubular projectile from a gun which comprises:

sabot means for obturating said subcaliber projectile passing through the barrel of said gun and for imparting rotation to said projectile which includes;

a cup shaped molded plastic housing having a spherical concave inner closed end therein; and

pusher plate means fixedly molded within said spherical concave inner closed end of said housing intermediate said sabot means and the rear end of said projectile for increasing the velocity of said projectile by reducing the parasitic weight of said pusher plate means, for aiding the removal of said means from said projectile after said projectile exits from the bore of said gun and for absorbing stress imposed on said sabot means and said projectile due to launch forces.

4,148,260

HIGH SPEED TRANSIT SYSTEM

Michael A. Minovitch, 2832 St. George St. Apt. 6, Los Angeles, Calif. 90027

Continuation-in-part of Ser. No. 466,609, May 3, 1974, Pat. No. 3,954,064, which is a continuation-in-part of Ser. No. 438,230, Jan. 31, 1974, Pat. No. 4,075,948. This application Apr. 30, 1976, Ser. No. 682,085

The portion of the term of this patent subsequent to May 4, 1993, has been disclaimed.

Int. Cl.[2] B61B *13/10, 13/08*

U.S. Cl. 104—138 R **54 Claims**

1. A rapid transit system comprising:

a plurality of stations;

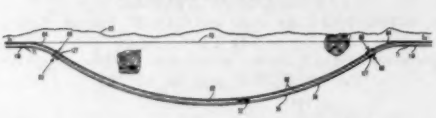
an underground tube which slopes downwardly along a smooth curve between a pair of adjacent stations of said system;

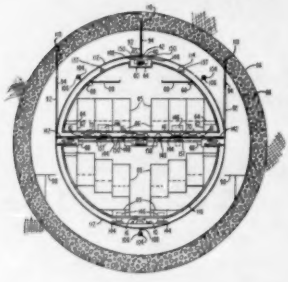
means for evacuating and maintaining vacuum in the tube;

a vehicle in the tube;

means for levitating said vehicle by a magnetic suspension system such that said vehicle is propelled essentially entirely by gravity when moving from one station to another station at equal elevations wherein acceleration propulsion is obtained by coasting down the descending arc of the vacuum tube, thereby generating vehicle kinetic energy substantially entirely from gravitational potential energy, and wherein deceleration is obtained by coasting up the ascending arc of the vacuum tube, thereby converting substantially all of the vehicle's kinetic energy back into gravitational potential energy to be used for making the next trip;

means for starting and stopping said vehicle in the immediate vicinity of each station; and





means for allowing passengers to pass between the said vehicle's interior and said station without removing the vehicle from the vacuum environment of the tube or without having to pressurize the tube.

4,148,261

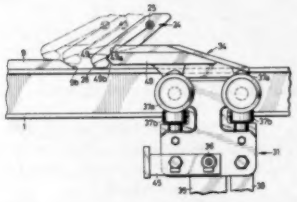
TRANSFER SYSTEM FOR POWER-AND-FREE CONVEYOR

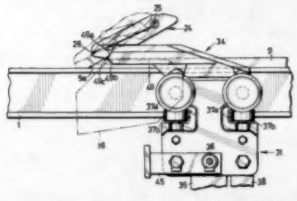
Takao Wakabayashi, Toyonaka, Japan, assignor to Standard Alliance Industries, Inc., Chicago, Ill.

Filed Sep. 2, 1977, Ser. No. 830,025

Int. Cl.[2] B61B *10/02*

U.S. Cl. 104—172 S **13 Claims**





10. In a power-and-free conveyor system of the type having a free rail, a work carrier on said free rail having a front driving dog and a rear cam member, a power rail spaced from said free rail, propelling means on and movable along said power rail having a pusher and means mounting said pusher for movement between a position in which it drivingly engages said driving dog to move said carrier along said free rail and a position in which it is disengaged from said driving dog, and a transfer station through which said carrier travels in moving from one section of said free rail to another section thereof, the improvement comprising means coacting with said pusher normally constraining the same for movement between normal-engaged and disengaged positions, said cam member having a cam portion and a driving portion, said cam portion being engageable by said pusher in its normal-engaged position and operable to deflect the latter to said disengaged position to override said cam member, said driving portion being engageable by said pusher by movement of the latter beyond its normal-engaged position, means permitting said pusher to move beyond its normal-engaged position in said transfer station for engagement with the driving portion of said cam member during travel of said carrier through said transfer station, and means for disengaging said pusher automatically from said driving dog and said cam member as said dog and said cam member moves out of said transfer station.

4,148,262

RAILWAY VEHICLE DRIVE

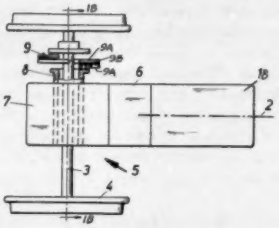
Johann Eichinger, Putzbrunn, Fed. Rep. of Germany, assignor to Carl Hurth Maschinen-und Zahnradfabrik, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 584,847, Jun. 9, 1975, abandoned, which is a continuation of Ser. No. 401,860, Sep. 28, 1973, abandoned. This application Dec. 2, 1976, Ser. No. 746,946

Claims priority, application Fed. Rep. of Germany, May 22, 1973, 2325787; Jun. 13, 1973, 2330000

Int. Cl.[2] B61C *9/44, 9/52;* B61F *3/04;* F16H *1/14*

U.S. Cl. 105—131 **11 Claims**



1. A drive mechanism for at least one axle of a sprung railway vehicle having at least a pair of axles, comprising:

frame means being sprung on said axles;

high speed drive motor means mounted on said frame means and being arranged between said pair of axles and having output shaft means extending in a direction parallel to the longitudinal direction of travel of said vehicle;

means defining a hollow shaft encircling said one axle and first support means on said frame means for supporting said hollow shaft for rotation, said hollow shaft having an axis parallel to the axis of said one axle and a sufficiently large inner diameter to permit a relative radial movement between said one axle and said hollow shaft;

means defining at least one torque transmitting member connected to and extending between said one axle and said hollow shaft, said torque transmitting member including lever means and pivot means for pivotally connecting said lever means to said axle and said hollow shaft for permitting said relative radial movement between said one axle and said hollow shaft while simultaneously maintaining said parallel axes in alignment and transmitting torque therebetween;

gear drive means supported on said sprung frame and connecting said output shaft means to said hollow shaft, said gear drive means consisting of at least two stages of reduction of speed, one of said stages of reduction of speed being a bevel gear train having a driving member and a driven member, said driving member consisting of a bevel pinion gear and said driven member consisting of a bevel gear drivenly connected to said bevel pinion gear, said driven bevel gear being fixedly mounted to said hollow shaft, the axes of said bevel gear train being offset from

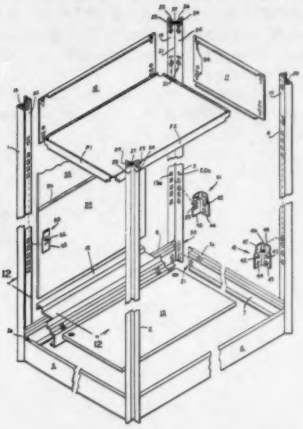
each other and the other of said stages of reduction of speed being a spur gear train having a driving member and a driven member, said driving member consisting of a spur pinion gear connected to said output shaft means of said drive motor means, said driven member consisting of a spur gear drivenly connected to said spur pinion gear and second support means on said frame means for supporting said spur gear for rotation on said frame means and connecting means for connecting said spur gear to said bevel pinion gear.

4,148,263

SHELVING ASSEMBLY

James M. Suttles, Elberton, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 19, 1978, Ser. No. 871,080
Int. Cl.[2] A47B *57/06*
U.S. Cl. 108—1 **15 Claims**



1. Support structure for a tiltable shelf having a plurality of edges, said structure comprising support means including a shelf support beam having an edge flange and a primary shelf support ledge arranged to engage one edge of the shelf so as to support the shelf in a substantially horizontal attitude and also having a tilting ledge formed on said shelf supporting beam at a level below and spaced inwardly from said primary shelf support ledge and arranged to engage said one edge of the shelf so as to support the shelf in a tilted attitude, and disjointable fastening means formed in said one edge of the shelf and in said supporting beam at said tilting ledge and arranged to form a disjointable connection therebetween, said disjointable fastening means comprising an aperture formed in said edge flange and a pair of projections formed at said tilting ledge one of which is arranged to enter said aperture and the other of which engages the inner surface of said edge flange.

4,148,264

TABLE HAVING MULTIPLE TABLE TOP ELEVATIONS

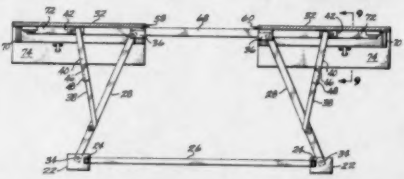
Diomedes Caravias, 8821 SE 72nd, Mercer Island, Wash. 98040

Continuation-in-part of Ser. No. 804,535, Jun. 8, 1977, abandoned. This application May 1, 1978, Ser. No. 901,702
Int. Cl.[2] A47B *9/00*; F47B *85/00*; A47B *1/04*
U.S. Cl. 108—145 **12 Claims**

1. A stable multipositioned table comprising:

a top member formed of at least two section, said sections supported in a fashion enabling movement away from each other to accept a leaf therebetween,

a pair of leg means pivotably secured to the top member to each opposing section and further pivotably secured along an axis parallel the axis of pivot to the top member, to a rigid linking member located below the top the pivot being located at a position horizontally outward from a vertical plane passing through the point of secure-to the table top whereby the table may be utilized in a lower position whereat the sections of the table top are contiguous or in an elevated position by pivoting the legs about



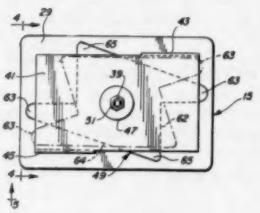
their pivot points and moving the bottoms of the legs together whereat the sections of the table top are caused to separate because of the rigid links and the interrelationship between the various parts enabling a larger and higher table once a leaf is inserted between the sections.

4,148,265

SAFETY BOX

Evelio Acosta, 8315 W. 18 Lane Dr., Hialeah, Fla. 33010

Filed Nov. 15, 1977, Ser. No. 851,751
Int. Cl.[2] E05G *1/04*
U.S. Cl. 109—59 R **10 Claims**



1. A safety box comprising:

a hollow body formed of a strong material;

an opening permitting access to the interior of said body;

latch securing means located at a plurality of points about the inner periphery of said body, said points being positioned inwardly from said opening;

a cover formed of a strong material to selectively close said opening;

a key-activated stem rotatably mounted in said cover plate;

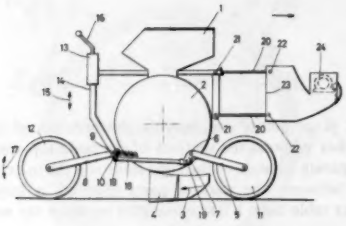
a generally flat latching plate solid but for a generally centrally located mounting hole for mounting said latching plate on said key-activated stem, said latching plate being formed in the shape of two similar substantially right triangles facing in opposite directions with the longer non-hypotenuse sides joined together for a portion of their length extending from the right angles of the triangles, the ends of the hypotenuses of the triangles providing a plurality of latching arms, corresponding in number to the plurality of points of said latch securing means, positioned about said latching plate so that rotation of said latching plate to a given position causes said latching arms to engage said latch securing means, said latching arms having a retracted position to permit removal of said cover from said body; and

locking means for rotating said latching plate to cause said latching arms to be moved from said retracted position to engage said latch securing means when said cover is to be fastened on said body in order to prevent access to the interior of said body.

4,148,266
SEED SOWING MECHANISM

Otto Weitz, Butzbach, Fed. Rep. of Germany, assignor to A. J. Tröster GmbH & Co. KG, Butzbach, Fed. Rep. of Germany

Filed Feb. 22, 1977, Ser. No. 770,693
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1976, 2613948
Int. Cl.[2] A01C 5/00
U.S. Cl. 111—52 11 Claims

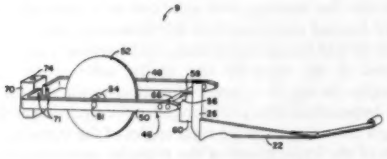


1. In a mechanism for sowing seeds having seed supply device including a plow carried by a sower frame and front and rear wheels for supporting the frame, said rear wheel being carried by a rear arm pivotally coupled at one end to the axle of said rear wheel and at the other end to said sower frame, and a front arm pivotally coupled at one end to the axle of said front wheel and at the other end to said frame, said front and rear arms including lever arm appendages, the improvement comprising means for moving one of said wheels generally upwardly when the other is moved generally downwardly, and vice versa, comprising a coupling rod connected by pivitol connections at its opposite ends to said lever arm appendages so that generally vertical movement of one of said wheels will result in concomitant movement of said coupling rod and generally vertical movement of the other of said wheels in the opposite direction of the movement of said one of said wheels, said concomitant movement of said coupling rod being determined solely by forces imparted through said pivitol connections.

4,148,267
PACKER WHEEL ASSEMBLY FOR TILLAGE APPARATUS

Michael V. Bennett, Boone, and Donald T. Sorlie, Ankeny, both of Iowa, assignors to Deere & Company, Moline, Ill.

Continuation of Ser. No. 649,507, Jan. 15, 1976, abandoned. This application Jun. 17, 1977, Ser. No. 807,710
Int. Cl.[2] A01C 5/06
U.S. Cl. 111—85 1 Claim



1. In a tillage unit having a forwardly positioned cutter wheel for cutting a furrow in the earth surface as the unit advances and a rigid vertically extending seed tube, a packer wheel assembly, comprising:

bracket means including a pair of spaced generally horizontal L-shaped arms equally offset to opposite sides of the furrow, said arms being composed of fore-and-aft extending opposed portions and transversely extending rear end portions extending inwardly from the respective fore-and-aft portions toward one another;

a thin packer wheel mounted on said bracket means between the fore-and-aft extending portions and forward of the rear end portions of said arms and centrally located with respect thereto so as to track said cutter wheel and to ride in the furrow cut thereby;

pivot means connected between the front portion of each of said arms and said tube to provide pivoting of said arms about a transverse horizontal axis;

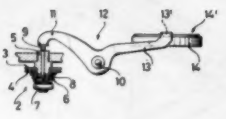
a brace extending between the arms closely adjacent the aforesaid horizontal axis and engageable with the tube to thereby serve as pivot stop means between said pair of arms and said tube for limiting downward movement of said arms; and

a transverse spray shield in fore-and-aft alignment with the tube and wheel extending between and connecting the rear end portions of said arms.

4,148,268
METHOD OF AND APPARATUS FOR THE PRODUCTION OF BUTTON-HOLES ON A DOUBLE LOCK STITCH BUTTONHOLE SEWING MACHINE

Walter Schmidt, and Gerhard Riss, both of Bielefeld, Fed. Rep. of Germany, assignors to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Oct. 27, 1977, Ser. No. 845,900
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1976, 2648561
Int. Cl.[2] D05B 3/06
U.S. Cl. 112—264.1 10 Claims



1. In a method of forming a buttonhole on a double-lock-stitch buttonhole-sewing machine having a stitch plate, a machine support provided with a needle above said stitch plate whereby said needle carries an upper thread forming a double-lock-stitch with a lower thread beneath said stitch plate, the tension of said upper thread being less than that of said lower thread during the formation of a buttonhole outline on the workpiece having its outer face turned downwardly upon said stitchplate, and a control disk for displacing said workpiece relative to said needle to form the buttonhole pattern wherein the pattern of the buttonhole is stitched with the relatively low upper-thread tension and the relatively high lower-thread tension so that interlocking loops of the upper and lower threads are drawn to the downwardly turned face of the fabric, the improvement which comprises stitching a fastening stitch through the fabric upon completion of the buttonhole-stitching pattern and, during the formation of said fastening stitch, temporarily increasing the tension of said upper thread above that of said lower thread to draw the interlocking loops of the upper and lower threads of said fastening stitch upwardly from the downwardly face of the fabric.

4. In an apparatus for producing a raised buttonhole upon a fabric having an outer face which comprises a double-lock-stitch buttonhole-sewing machine having a stitchplate, a machine support provided with a needle above said stitchplate whereby said needle carries an upper thread forming a double-lock-stitch with a lower thread beneath said stitchplate, the tension of said upper thread being greater than that of said lower thread during the formation of a buttonhole outline on the workpiece having said outer face turned downwardly upon said stitchplate, and a control disk for displacing said workpiece relative to said needle to form the buttonhole pattern, the improvement which comprises means for temporarily increas-

ing the upper-thread tension above that of the lower thread for the formation of a terminal fastening stitch at the end of the stitching of the buttonhole pattern whereby interlocking loops of the upper and lower threads are drawn away from the downwardly turned face of said workpiece.

4,148,269

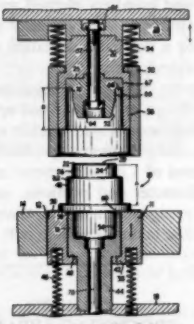
METHOD OF MAKING DRIPLESS METAL CAN NOZZLE

Vincent L. Leccese, Homerville, Ga., assignor to Standard Container Company, Montclair, N.J.

Division of Ser. No. 661,650, Feb. 26, 1976, abandoned. This application May 19, 1977, Ser. No. 798,445

Int. Cl.[2] B21D *22/00*

U.S. Cl. 113—116 DD **16 Claims**



1. A method of forming a can nozzle from a metal nozzle blank having at its top end an inwardly turned flange with an inner edge, which defines an opening in the top end of the nozzle blank, comprising the steps of:

(a) spreading the flange upwardly and outwardly to widen the opening and form an outward bulge in the top end of the nozzle blank;

(b) folding the bulge outwardly and sharply at substantially its midsection; and

(c) flattening the portion of the bulge above the fold down over the portion of the bulge below the fold until adjacent surfaces of the two portions of the bulge lie flat against each other to form a flat outwardly extending hem at the top end of the nozzle blank.

4,148,270

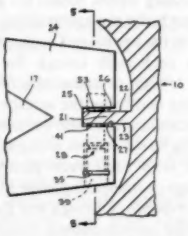
COUPLING APPAPATUS FOR ARTICULATED BODIES

Robert A. Bludworth, P.O. Box 12424, Houston, Tex. 77017

Filed Apr. 29, 1974, Ser. No. 465,147

Int. Cl.[2] B63B *21/62*

U.S. Cl. 114—248 **43 Claims**



1. An articulated movable combination comprising:

a first marine vessel having a throughgoing notch at one end, said notch having a pair of oppositely disposed wings;

a second marine vessel having a forward portion and sides, at least a portion of said second vessel being receivable in said notch;

said first marine vessel comprising at least one first coupling assembly including at least one bearing member having oppositely directed, non-resilient, substantially vertical bearing surfaces, said second vessel comprising a second coupling assembly, said second coupling assembly being engageable with said first coupling assembly generally forward of said notch when said second vessel is received in said notch, said second coupling assembly including gripping means having rigid gripping surfaces for frictionally and non-resilienty engaging said bearing surfaces;

said gripping means comprising first and second gripping members, said first gripping member having a surface engageable with one of said bearing surfaces, said second gripping member having a surface engageable with the other of said bearing surfaces, said first gripping member being mounted for movement in a direction generally transverse to said bearing surfaces, said gripping members being generally cylindrical and mounted for rotation about a generally common horizontal axis, said axis being generally transverse to said bearing surfaces;

means for effecting engagement of said gripping means with said bearing surfaces; and

lateral bearing means disposed between opposite sides of said second body and said wings generally rearwardly of said notch, said lateral bearing means preventing substantial relative yawning and rolling of said first and second vessels.

4,148,271

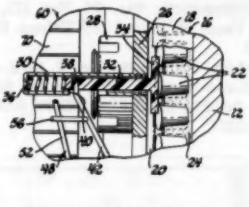
INCIPIENT BEARING FAILURE INDICATOR

Paul M. Majernik, Hartland, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 20, 1978, Ser. No. 888,177

Int. Cl.[2] F16C *17/00;* **G08B** *21/00*

U.S. Cl. 116—67 R **2 Claims**



1. An incipient failure signalling indicator for a roller bearing mounted between two relatively rotating members, the bearing having elongated rollers terminating in end faces and a cage for uniformly spacing the rollers, the indicator being responsive to nonuniform roller spacing occurring upon failure of the cage, comprising

a support adjacent one end of the bearing and mounted on one of the members,

a probe carried by the support, the probe including a shoe member positioned against the end faces of the rollers, the shoe member being wide enough to span two rollers when they are uniformly spaced,

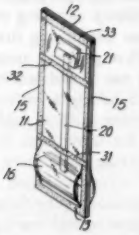
means for urging the probe toward the rollers so that the shoe member normally rides on the end faces of the rollers as they rotate past the shoe member, whereby when cage failure allows the rollers to become spaced nonuniformly and a gap wider than the shoe member is formed between the rollers, the probe is moved into the said gap, and

means responsive to the probe movement for actuating means for signalling incipient bearing failure.

4,148,272
THAW DURATION DETECTOR

Paul W. Wetzold, Armonk, N.Y., assignor to Paula Mann, New York, N.Y.

Filed Apr. 10, 1978, Ser. No. 894,754
Int. Cl.[2] G01K 11/08
U.S. Cl. 116—219 7 Claims

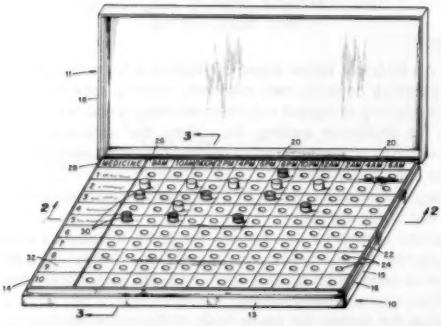


1. A method for producing a thaw duration detector comprising: filling the bottom of an open ended heat sealable, transparent thermoplastic pouch with a dilute aqueous indicator solution; freezing the indicator solution in the bottom of the pouch; positioning an absorbent strip having an indicator strip secured thereto at one end thereof within said pouch with the indicator strip near the top end of the pouch and the other end of the absorbent strip just above and close to the frozen solution; heat sealing the lower portion of the pouch to provide a first compartment wherein the frozen aqueous solution is confined and isolated along with the lower end of said absorbent strip; heat sealing the upper portion of the pouch to provide second and third compartments; said second compartment containing the major portion of the absorbent strip, said third compartment containing the indicator strip in contact with the absorbent strip, whereby the absorbent strip absorbs a thawed indicator solution at a controlled rate to produce a predetermined time lapse prior to contacting the indicator strip.

4,148,273
MEDICINE MANAGEMENT DEVICE

Delbert L. Hollingsworth, Rte. #6, Box 321, Leesburg, Fla. 32748, and Vance R. Sharp, 109 Balsam Rd., Oak Ridge, Tenn. 37830

Continuation of Ser. No. 721,092, Sep. 7, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 833,250
Int. Cl.[2] B65D 85/56; G09F 9/00
U.S. Cl. 116—325 3 Claims



1. A medicine management device for use as a visible indicator of the time schedule for the administration of prescribed drugs to a patient, which comprises:

a. a rectangular base member having a flat top surface and edges, said edges designated as top, bottom, right end and left end, said top surface being provided with a plurality of apertures into said base member, said apertures being arranged into orthogonal columns and rows;

b. a cover portion hinged to said base member at said top edge, said cover adapted to enclose and be spaced above said top surface when in a closed position and to expose said top surface when in an open position;

c. indicia placed along at least one of said top edge and said bottom edge of said top surface associated with each of said columns of apertures, said indicia representing time zones spanning a twenty-four hour period;

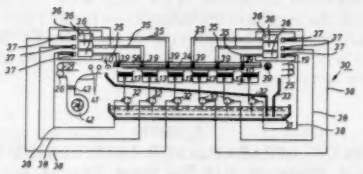
d. a pad having a multiplicity of selectively removable sheets of paper fitted along at least one of said right end and left end of said top surface associated with each of said rows of apertures, said sheets having preprinted index numbers thereon, said numbers aligned to correspond with said rows of apertures and whereby said sheets of the pad provide for a written designation of specific medications for said patient; and

e. one or more color coded peg members removably engaged with one or more of said apertures in said rows as a visible indicator of said specific medication to be administered to said patient at a specific time, said peg members each formed of a large diameter middle portion and two smaller diameter end portions, said end portions being selectively engaged in said apertures in accordance with the medicine taking time schedule zones.

4,148,274
PROCESSING APPARATUS

Emile F. Stiévenart, Hoboken; Leo N. Vackier, Borgerhout, and Willy G. Verlinden, Edegem, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Oct. 10, 1975, Ser. No. 621,519
Claims priority, application United Kingdom, Oct. 15, 1974, 44666/74
Int. Cl.[2] B05C 5/02; G03G 15/06
U.S. Cl. 118—2 25 Claims

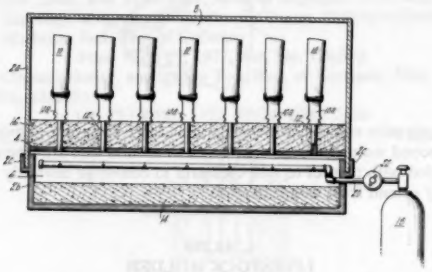


1. An apparatus for use in processing a recording material in sheet or web-form comprising at least one open-topped trough for holding processing liquid, means for guiding sheet recording material through the apparatus along a path passing over and in proximity to the opening of each such trough, individual pump means for each such trough for pumping liquid upwardly into said trough to cause overflow of liquid through the trough opening and bring the surface of the liquid in each such trough into contact with the bottom surface of a recording material during its movement along said path, means operatively associated with each such pump for operating each pump upon passage of the leading edge of said recording material over the corresponding trough and for stopping the pumping of liquid to the corresponding trough before the trailing edge of the sheet material reaches the surface of the liquid in such trough, each such trough having a porous member disposed therein just below the opening thereof and an inlet for the admission of processing liquid into the interior of the trough beneath said porous member, said porous member carrying on its upper surface a plurality of generally equispaced upstanding ridges for promoting uniform flow of processing liquid in the spaces between said ridges.

4,148,275
APPARATUS FOR GAS PHASE DEPOSITION OF COATINGS

Robert S. Benden, Manchester, and Richard S. Parzuchowski, Bethel, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 661,903, Feb. 25, 1976. This application Sep. 26, 1977, Ser. No. 836,879
Int. Cl.[2] C23C *13/03*
U.S. Cl. 118—49.5 4 Claims



3. An apparatus useful for the gas phase deposition of a coating on the interior surfaces of a plurality of hollow articles, comprising:

(a) an enclosure having a manifold member therein to define a lower and upper chamber, the lower chamber being adapted to contain a first source of coating gas and the upper chamber being adapted to house the articles to be coated, and connector means in the form of a plurality of upwardly oriented hollow tubes extending through the manifold member, each tube opening at its lower end into the lower chamber above the source of coating gas and at its upper end into the interior of an article to be coated whereby said hollow tubes can direct gas from the lower chamber into the articles to be coated, and

(b) carrier gas means for supplying a carrier gas to the lower chamber at a controlled flow rate, the carrier gas transporting the coating gas generated in said lower chamber through the upwardly oriented hollow tubes and then into each of the articles to be coated at a controlled flow rate to deposit a coating of desired thickness substantially uniformly on the interior article surfaces.

4,148,276
BROILER BATTERIES

Albert Schmidt, Ankum, Fed. Rep. of Germany, assignor to Schmidt-Ankum Agrar- und Zwecksbau, Ankum, Fed. Rep. of Germany

Filed Dec. 1, 1976, Ser. No. 746,309
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1975, 2555357
Int. Cl.[2] A01K *31/04, 31/06*
U.S. Cl. 119—18 23 Claims

1. A battery for rearing broilers, comprisng in combination,

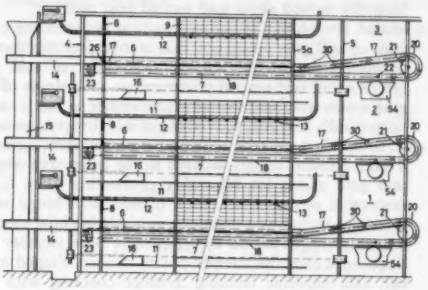
a frame having opposite side walls and a front end movable wall attached to said frame and in part defining a unitary space for housing broilers;

flexible floor means disposed in the bottom of the unitary space forming a housing, said floor means including a perforated belt of an endless loop, a rear wall attached to said perforated belt;

guide means operatively mounted on said frame for operatively, longitudinally guiding said endless loop on said frame;

a manure channel is mounted on the frame underneath each floor means and is adpated to receive the bird droppings from the broilers disposed on said floor means above said manure channel,

said perforated belt having an operative surface and being substantially coextensive with the bottom of said housing and having a cable for connecting its ends, said guide means guiding said perforated belt from an upper operative position to a lower inoperative position removed substantially 180° about said guide means whereby bird



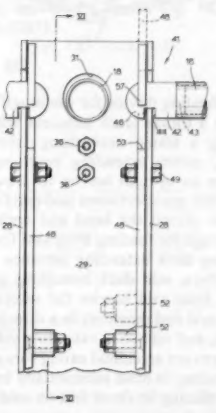
droppings remaining on the operative surface thereof drop onto said manure channel; and

means for driving said loop in opposite directions to move said floor means in its own plane and into and out of said housing through one end thereof.

4,148,277
ANIMAL PEN CONSTRUCTION

William L. Engle; Charles E. Zuverink, both of Zeeland; Richard A. Vander Kolk, Port Sheldon; Thomas L. Brooks, Wyoming, all of Mich., and Cecil L. Weaver, North Manchester, Ind., assignors to Cyclone International Incorporated, Holland, Mich.

Filed Feb. 25, 1977, Ser. No. 772,326
Int. Cl.[2] A01K *1/02;* E04H *17/00*
U.S. Cl. 119—20 13 Claims



1. In an animal pen construction having wall means defining an enclosed confinement space for livestock, said wall means including a plurality of upright walls and post means fixedly associated with said walls for maintaining same in an upright position, and at least one of said walls having horizontally swingable gate means associated therewith for selectively providing access into said confinement space, the improvement comprising:

said post means including first and second identical post members disposed adjacent the opposite vertical edges of

said gate means, each said post member comprising an elongated open channel-shaped member;

a first latch-hinge structure coacting between one edge of said gate means and said first post member for permitting horizontal hinging movement of said gate means about said first post member and release of said gate means from said first post member so that it can be horizontally hingedly moved about said second post member;

a second latch-hinge structure coacting between the other edge of said gate means and said second post member for permitting horizontal hinging movement of said gate means about said second post member and release of said gate means from said second post member so that it can be horizontally hingedly moved about said first post member;

each of said first and second latch-hinge structures including a latch element fixedly secured to the respective edge of said gate means for releasably connecting same to the respective post member, each of said latch-hinge structures also including a manually movable latching member movably supported on the respective post member and disposed within the interior of said channel-shaped member, said movable latching member coacting with said latch element for holding the gate means closed or for permitting the structure to function as a hinge when the movable latching member is in a latched position.

4,148,278

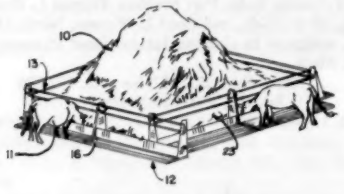
SELF FEEDING BUNK OR BARRIER

Joseph A. Anderson, Jamestown, N. Dak., assignor to Haybuster Manufacturing, Inc., Jamestown, N. Dak.

Filed Oct. 25, 1977, Ser. No. 845,316

Int. Cl.[2] A01K *5/00*

U.S. Cl. 119—60 **4 Claims**



1. A portable feeding device for use in self feeding of forage by animals from a forage stack adjacent which the barrier is placed including a frame comprising laterally spaced end frame members, means extending between said end frame members to form an upright barrier to prevent animals from passing through the space between said end frame members but having spaces to permit the head and neck of an animal to extend therethrough for feeding from said forage stack, and an animal supporting deck extending between and fixed to said end frame members, said deck extending generally horizontally outwardly from said barrier for substantially the entire length between said end members in a direction opposite from said forage stack, and said deck extending sufficiently from the barrier wall to prevent an animal eating forage from the forage stack from extending its head substantially beyond the upright barrier without placing its front feet on said deck.

4,148,279

EAR BRACE FOR DOGS

Barrie Hoytt, Rte. 1, Box 46, Lockport, Ill. 60441

Filed May 4, 1977, Ser. No. 793,623

Int. Cl.[2] A01K *29/00*

U.S. Cl. 119—96 **7 Claims**

1. An ear brace for dogs, comprising a crossarm corresponding in dimension to the width of that part of a dog's head on which it is to be used and being slightly larger than such width, and side-arm means depending from said crossarm, wherein said side-arm means includes a first straight member depending from one end of said crossarm at an angle thereto to provide a first main side-arm, a second straight member depending from

the opposite end of said crossarm at an angle thereto to provide a second main side-arm, said first and second side-arms being angled with respect to said crossarm to converge inwardly as they extend from said crossarm.

4,148,280

LIVESTOCK HOLDER

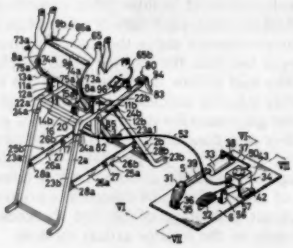
Hideo Masuda, 138, Takaoka-cho, and Masayuki Matsuura, 464, Higashi-mikata-cho, both of Hamamatsu-shi, Shizuoka-ken, Japan

Filed Dec. 7, 1976, Ser. No. 748,304

Claims priority, application Japan, Dec. 8, 1975, 50-165405[U]

Int. Cl.[2] A61D *3/00*

U.S. Cl. 119—103 **6 Claims**



1. A livestock holder comprising:

(A) a pair of holding means facing each other at their concave curved portions;

(B) a pivotal axis for rotatably supporting said pair of holding means at their lower portion, said curved portions of the holding means being moved away from, and toward each other upon rotation of said holding means around said pivotal axis;

(C) a spring means for urging said holding means so as to rotate around said pivotal axis in a direction to move said curved portions of the pair of holding means away from each other;

(D) a pedal means;

(E) a drive means for driving said pair of holding means concurrently against said spring means upon actuation of said pedal means to move said curved portions of the holding means toward each other;

(F) a first power transmitting means forming part of said drive means, said first power transmitting means being connected to said pedal means and actuated by said pedal means for driving said holding means;

(G) a second pedal means;

(H) a locking means for automatically locking said holding means at the driven position, whereby said livestock is bodily held between both of said holding means; and,

(I) A second power transmitting means comprising part of said locking means, said second power transmitting means being connected to said second pedal means and actuated by said second pedal means to unlock said pair of holding means to allow the holding means to return to their original positions.

4,148,281

STEAM GENERATOR AND PRESSURIZED-WATER NUCLEAR REACTORS

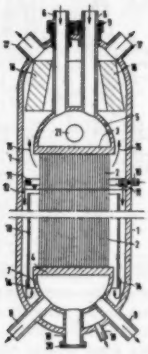
Alfred Stoll, and Fritz Kelp, both of Erlangen, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

Filed Mar. 17, 1977, Ser. No. 778,592

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1976, 2612081

Int. Cl.² F22B *1/02, 37/24;* F28F *7/00*

U.S. Cl. 122—32 **4 Claims**



1. Steam generator for pressurized-water nuclear reactors having a steam jacket, two horizontally disposed tube support plates, a multiplicity of rectilinear tubes traversed by primary water, the tubes being disposed within the steam jacket secured between the two tube support plates, a compensator for length equalization, and at least one connecting tube for supplying the primary water secured within the steam jacket through the compensator, comprising a water chamber respectively disposed within the steam jacket and adjoining each of the tube support plates, and a guide jacket for circulating feedwater supplied into the steam jacket, the guide jacket being mounted within the steam jacket and having a lower portion extending into a space located between the steam jacket and the lower tube support plate.

4,148,282

METHOD AND APPARATUS FOR COLD STARTING FUEL INJECTED INTERNAL COMBUSTION ENGINES

Alfred Grassle, Ludwigsburg; Hans Schnürle, Walheim, and Thomas Wilfert, Markgroningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 668, 419, Mar. 19, 1976. This Application Jun. 1, 1978, Ser. No. 911,591

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1975, 2511976

Int. Cl.² F02B *3/00*

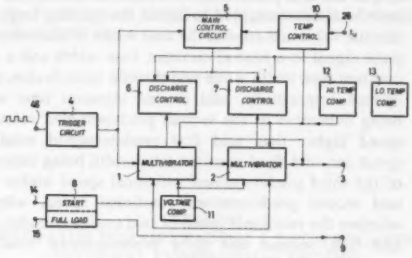
U.S. Cl. 123—32 EG **22 Claims**

22. An apparatus for controlling fuel injection during cold starts of an internal combustion engine, said engine including a fuel injection system and means for producing a signal related to crankshaft rotation and a signal related to engine temperature, comprising:

a first timing device whose output engages said fuel injection system, for providing special fuel injection control pulses during cold starts;

a first capacitor, connected to the input of said first timing device for controlling the timing constant of said first timing device;

a second timing device actuated by said first timing device for providing two separate fuel injection pulses for each crankshaft revolution;



a second capacitor for determining the timing constant of the second timing device, the charging of the first and second capacitors taking place by means of a temperature-dependent voltage;

a discharge control circuit for each capacitor for controlling the discharge of the capacitors to thereby control the switching of the timing devices; and

a master control circuit, for receiving said signals related to crankshaft rotation and for controlling said discharge control circuit.

4,148,283

ROTATIONAL SPEED DETECTING APPARATUS FOR ELECTRONICALLY-CONTROLLED FUEL INJECTION SYSTEMS

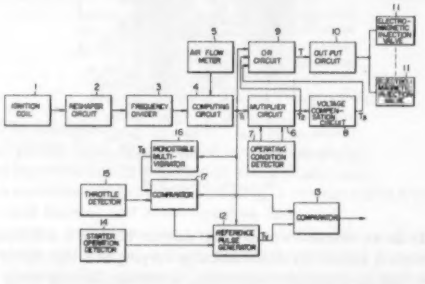
Susumu Harada, Oobu, and Kunio Endo, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 1, 1977, Ser. No. 812,598

Claims priority, application Japan, Jul. 19, 1976, 51-86412; Nov. 17, 1976, 51-138711

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EG **4 Claims**



1. In combination with an electronically-controlled fuel injection system in which a pulse signal is generated for controlling the amount of fuel injection in substantial synchronism with the rotation of an engine, a rotational speed detecting apparatus comprising:

a reference pulse generator, connected to said fuel injection system, for generating a reference pulse signal in synchronism with said pulse signal, the time width of said reference pulse signal being controlled in response to an input signal applied thereto;

condition detecting means for detecting the preselected operating condition of said engine and generating an out-

put signal indicative thereof, said output signal being applied to said reference pulse generator to control the time width of said reference pulse signal to a constant time width indicative of the predetermined rotational speed of said engine, said condition detecting means including

a starter operation detector adapted to detect the operation of a starter motor and control the time width of said reference pulse signal to a first constant time width indicative of the first predetermined rotational speed; and

a throttle detector adapted to detect the opening angle of a throttle valve and control the time width of said reference pulse signal to a second constant time width and a third constant time width while said throttle valve is closed and opened respectively, said second constant time width being indicative of the second predetermined rotational speed higher than said first predetermined rotational speed and said third constant time width being indicative of the third predetermined rotational speed higher than said second predetermined rotational speed, whereby whether the rotational speed of said engine is higher than said first, second and third predetermined rotational speeds or not is discriminated by said comparison circuit; and

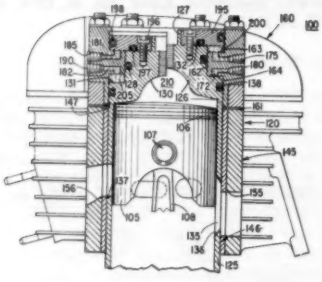
a comparison circuit, connected to said reference pulse generator and said fuel injection system, for comparing the one cycle period of said pulse signal indicative of the rotational speed of said engine with the time width of said reference pulse signal, whereby whether the rotational speed of said engine is higher than said predetermined rotational speed or not is discriminated while said engine is in said preselected operating condition.

4,148,284

VARIABLE COMPRESSION RATIO ENGINE

Gildo G. Prosen, Chicago, Ill., assignor to Promac Corporation, Glenview, Ill.

Filed Feb. 10, 1977, Ser. No. 767,306
Int. Cl.[2] F02B *75/04*
U.S. Cl. 123—78 C **10 Claims**



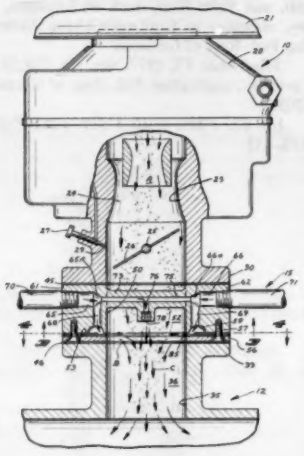
1. In an internal combustion engine having a combustion chamber, means for automatically varying the volume of the combustion chamber comprising, a cylinder having inner and outer sleeves, said inner sleeve defining at least a portion of the combustion chamber, a stationary cylinder head housing associated with said inner and outer sleeves, and means in said cylinder head housing forming a plurality of variable capacity fluid chambers and providing relative movement between said inner sleeve and said cylinder head housing to vary the volume of the combustion chamber, said means being responsive to pressure in the combustion chamber to vary the volume of fluid in said chambers to increase the combustion chamber volume in response to an increase in pressure and to decrease the combustion chamber volume in response to a decrease in pressure.

4,148,285

FUEL ATOMIZING DEVICE AND METHOD FOR GASOLINE ENGINE

William P. Ahlers, St. Cloud, Minn., assignor to Fuel Systems of Minnesota, Duluth, Minn.

Filed Feb. 28, 1977, Ser. No. 772,353
Int. Cl.[2] F02M *23/12*
U.S. Cl. 123—119 D **1 Claim**



1. In an internal combustion engine having a carburetor superposed in relation to an intake manifold and having a fuel-air mixture passing therethrough during operation and a substantially flat plate-like device interposed between said carburetor and said intake manifold, the improvement herein comprising

said plate-like device having a bore therethrough and having a single annular channel about said bore,

said bore having a passage therethrough in register with the passage in said carburetor and with the passage in said intake manifold,

said channel being formed in an upper portion of said device,

a spacing member underlying said upper portion of said device and said channel spacing the same from a lower underlying portion of said device and having an opening therein in register with and set back from the inner portion of said channel forming an unobstructed passage from said channel into said bore,

said plate like device having an unobstructed inlet port for communication between the atmosphere and said annular channel,

a strut disposed across said bore having a passage therethrough communicating with said inlet port,

said last mentioned passage having an air passage having a restricted outlet in the direction of said intake manifold,

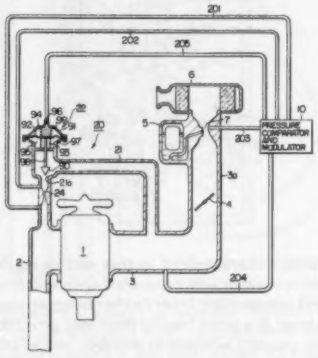
whereby said air passing through said restricted outlet and through said annular channel as a result of engine induced suction enters said passage of said plate-like device at a greater velocity than that of the fuel-air mixture from said carburetor thereby creating a cyclonic action and said fuel-air mixture is impacted for further atomization, and

said restricted outlet creating a virtual venturi causing said fuel-air mixture to pass into said intake manifold substantially centrally of the passage therein.

4,148,286
EXHAUST GAS RECIRCULATION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Tokio Kohama, Nishio; Hideki Obayashi, Hoi; Tadashi Ozaki, Nishio, and Hidetaka Nohira, Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 29, 1977, Ser. No. 837,865
Claims priority, application Japan, Oct. 1, 1976, 51-118736; Oct. 1, 1976, 51-118737
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 A 7 Claims

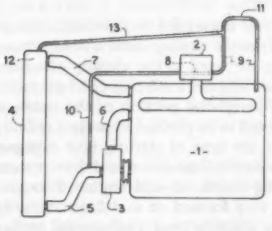


1. An exhaust gas recirculation system for an internal combustion engine having an intake system, including a carburetor venturi upstream of a throttle valve, and an exhaust system, comprising: an E.G.R. passage for recirculating engine exhaust gases from the exhaust system back into the intake system downstream of the throttle valve; and E.G.R. control valve means associated with said E.G.R. passage and operative in response to a pressure signal to vary the exhaust gas-flow cross-sectional area of said E.G.R. passage; a restriction means disposed in said E.G.R. passage; and a pressure comparator and modulator operative to compare the vacuum of the venturi with the pressure differential across said restriction means and modulate said pressure signal so that said pressure differential is always proportional to said venturi vacuum whereby the volumetric flow rate of recirculated exhaust gases is made proportional to the volumetric flow rate of engine intake air.

4,148,287
DEVICE FOR HEATING A CARBURETOR

Jacques Sigwald, Taverny, France, assignor to Automobiles Peugeot, Paris, France

Filed Apr. 26, 1977, Ser. No. 790,931
Claims priority, application France, Apr. 30, 1976, 76 12973
Int. Cl.² F02M *31/00*
U.S. Cl. 123—122 E 6 Claims

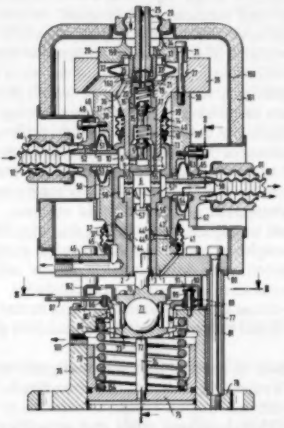


1. A device comprising:
an explosion engine having a carburetor, and a main cooling circuit including a liquid circulating pump and an expansion chamber containing a gaseous phase and a liquid phase;
an auxiliary heating liquid circuit in heat exchange relationship to the carburetor, connected to the suction side of the circulating pump, and having a loop portion located above the liquid phase level in the expansion chamber; and
pipe means located entirely above the liquid phase level in the expansion chamber, and connecting the loop portion to the expansion chamber at a position above the liquid phase level.

4,148,288
APPARATUS FOR OPERATING A RECIPROCATING INTERNAL COMBUSTION ENGINE

Anton Steiger, Illnau, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 17, 1976, Ser. No. 715,150
Claims priority, application Switzerland, Jun. 11, 1976, 7391/76
Int. Cl.² F02M *39/00, 39/02*
U.S. Cl. 123—139 R 22 Claims



1. In combination,
a cylinder head of an internal combustion engine;
an injection nozzle mounted in said cylinder head;
an injection pump having a housing, a suction valve within said housing and a fuel overflow line;
a suction line connected to said housing in communication with said suction valve to deliver liquified fuel thereto;
a pressure line connected between said housing and said injection nozzle to deliver pressurized liquified fuel from said pump to said nozzle; and
means for heating said injection nozzle, said injection pump, said overflow line, said suction line and said pressure line to maintain the fuel therein in a liquified state,
said means including a plurality of jackets, each said jacket concentrically surrounding a respective one of said suction line, pressure line and overflow line;
a fourth jacket surrounding said injection pump housing and a fifth jacket surrounding said injection nozzle, and wherein said plurality of jackets are interconnected with said fourth and fifth jackets to convey a heating medium therebetween.

4,148,289

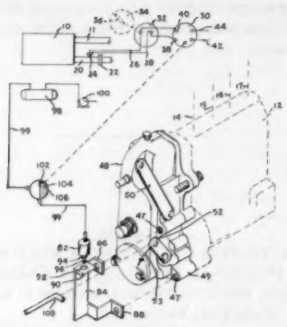
DIESEL ENGINE CONTROL MEANS

John T. Hewitt, 1021 Camino Real, Redondo Beach, Calif. 90245

Filed May 31, 1977, Ser. No. 801,606

Int. Cl.[2] F02D *1/04*; F02B *77/08*

U.S. Cl. 123—140 MC **9 Claims**



1. In an internal combustion engine having multiple cylinders and fuel supply means including multiple metering valves and injectors, one for each of said cylinders, a rack mechanism to position said metering valves to control the volume of fuel delivered therefrom to said injectors, a shut down lever moveably mounted and mechanically coupled to said rack, and shutdown lever actuation means coupled to said lever to effect sufficient movement of said lever to reposition said rack to a shut down position closing said metering valves to cease delivery of fuel therefrom, the improvement which comprises

fluid pressure responsive actuator means having an actuator rod mechanically linked to said shut down lever means to effect movement thereof and a full travel from about 0.2 to about 0.5 times the lever displacement necessary to move said rack to its shut down position whereby said actuator can dethrottle, but not shut off said engine;

pressure fluid supply means including a source of fluid under superatmospheric pressure and a conduit communicating therebetween with said actuator means and including valve means to open or close said conduit;

an engine exhaust gas temperature sensing means to generate a sensed signal responsive to engine exhaust gas temperature;

control means to receive said sensed signal, compare said signal to a preset signal level corresponding to a maximum safe operational engine temperature, and to generate a control signal therefrom when said sensed signal exceeds said preset signal level; and

means interconnecting said control means to said valve means to actuate said valve means and apply pressure to said actuator means in response to said control signal.

4,148,290

CENTRIFUGAL REGULATOR SYSTEM FOR FUEL INJECTION COMBUSTION ENGINES

Peter Knorreck, Weissach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

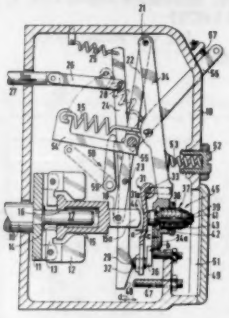
Filed Jul. 1, 1977, Ser. No. 812,199

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1976, 2629620

Int. Cl.[2] F02D *1/04*

U.S. Cl. 123—140 R **9 Claims**

1. A centrifugal regulator system for fuel injection combustion engines having a fuel pump, comprising a fuel quantity adjustment member for adjusting the fuel quantity transported by said fuel pump, a governor member that is rpm-dependently displaceable by means of centrifugal weights, at least one intermediate lever for transmitting the governing motion of said governor member to said fuel quantity adjustment member, a force transfer member indirectly acting upon said fuel quantity adjustment member, at least one spring element for applying a force to said force transfer member, at least one elastically sprung contact element engaging said force transfer member and said governor member, and a swing lever interposed between said governor member and said force transfer



member, further characterized in that said swing lever has a fulcrum which is swingably connected with said force transfer member, said intermediate lever further being arranged to abut said swing lever at a point remote from said governor member and said fuel quantity adjustment member, and a further spring means tending to maintain said swing lever in contact with said intermediate lever.

4,148,291

RECOIL-TYPE STARTER FOR INTERNAL COMBUSTION ENGINE

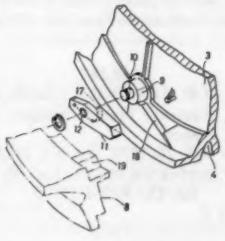
Michihiro Taguchi, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 19, 1977, Ser. No. 834,280

Claims priority, application Japan, Sep. 30, 1976, 51-131754[U]

Int. Cl.[2] F02N *3/02*

U.S. Cl. 123—185 B **8 Claims**



1. A recoil-type starter for an internal combustion engine comprising: a drum; a starting wire wound around the drum, said drum being disposed in the vicinity of a driven member connected to said engine; a starting pawl pivotally carried by said drum at a peripheral portion of the latter, said starting pawl being adapted to be pivoted to project radially outwardly of said drum at the time of starting into engagement with a cooperative projection formed on said driven member so as to impart a starting inertia to said engine through said driven member, and a stop formed on said drum unitarily therewith, and adapted for abutting over a substantial surface-to-surface area of contact said starting pawl at a portion close to the outer end of the latter at which it engages said cooperative projection, from the radially outer side of said drum, thereby to limit the outward pivotal movement of said starting pawl, said pawl

projecting laterally beyond said stop whereby to engage said cooperative projection.

4,148,292

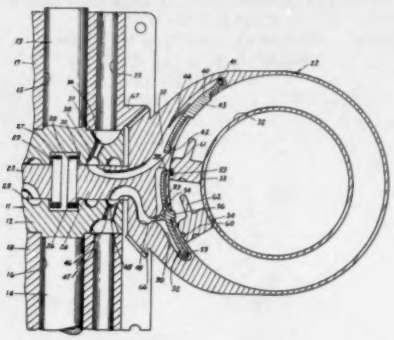
ENERGY CONVERSION DEVICES

Zinovy Reytblatt, 530 W. Aldine, Chicago, Ill. 60657

Filed Oct. 21, 1976, Ser. No. 734,448

Int. Cl.[2] F02B *55/00*; F03C *3/00*

U.S. Cl. 123—245 **5 Claims**



1. In a device for energy conversion between rotational mechanical motion and fluid flow, rotatable drive means journalled for rotation about a first axis, means for coupling said rotatable drive means to load means for driving said load means, a housing member defining a chamber therewithin, at least one piston member movable within said chamber of said housing member with said chamber and said piston member having substantially the same cross-sectional size and shape, means supporting one of said members from said rotatable drive means for movement relative to said rotatable drive means about a second axis in fixed relation to said rotatable drive means and in non-parallel relation to said first axis with said second axis being thereby rotatable with said rotatable drive means about said first axis, means establishing communication between said fluid inlet and outlet means and said chamber, means defining a wall cooperating with said piston member and with internal wall portions of said chamber engaged by said piston member to define a space which during movement of said piston member relative to said housing member changes in volume betweem minimum volume and maximum volume conditions, and means whereby fluid in said space in pressurized in said minimum volume condition to increase the volume of said space and move said piston member in a direction to exert forces against said internal wall portions of said chamber to assist movement of said one of said members about said second axis and rotation of said drive means and said second axis about said first axis and to drive said drive means.

4,148,293

SOLAR ENERGY RECEPTOR APPARATUS

James M. Lents, 2938 Old Britain Cir., Chattanooga, Tenn. 37407, and Barry V. Rhodes, Sr., Rte. #1, Johnson Rd., Chickamauga, Ga. 30707

Division of Ser. No. 533,254, Dec. 16, 1974, abandoned. This application Apr. 4, 1977, Ser. No. 784,232

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—270 **4 Claims**

1. Solar energy receptor panel, comprising:

a first sheet of material having a substantial coefficient of thermal conductivity;

said first sheet having at least one elongate channel formed therein by deformation of said material away from a first surface of the sheet;

said elongate channel being surrounded by undeformed regions of said first surface;

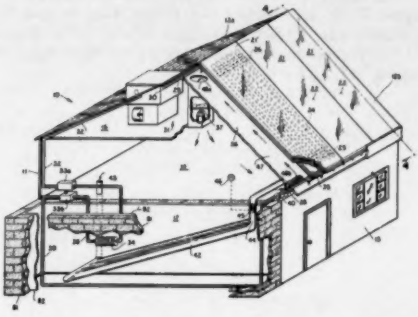
a second sheet of said material;

said second sheet having a surface in confronting relation to said first surface of said first sheet;

said second sheet having at least one first channel deformed in said confronting surface in substantially transverse relation to said elongate channel and intersecting said one elongate channel at a first end thereof;

said second sheet having at least one second transverse channel defomed in said confronting side and intersecting said one elongate channel at a first end thereof;

said second sheet having at least one second transverse channel deformed in said confronting side and intersecting said elongate channel at a second end thereof;



said first surface and said confronting surface being in mutual contact at locations other than said deformations;

means securing together said first and second sheets at the mutually confronting peripheral regions of said sheets;

said first surface and said confronting surface being each smooth contacting nonadhering surfaces;

said channels being defined between said deformations and the confronting surface of the opposed said sheet; and

a coating of carbon particles deposited on the exterior of at least one sheet of said panel, said particles being sufficiently small to admit incoming solar radiation to said exterior and being sufficiently large to impede energy radiation from said exterior.

4,148,294

SOLAR COLLECTOR PANEL AND METHOD OF MAKING

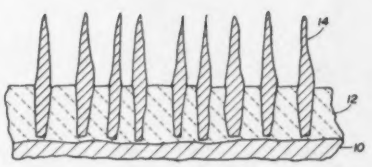
Werner Scherber, Salem, and Günther Dietrich, Daisendorf, both of Fed. Rep. of Germany, assignors to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Apr. 8, 1977, Ser. No. 786,443

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1976, 2616662

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—270 **6 Claims**

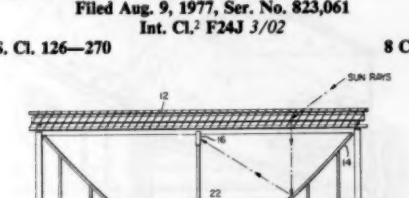


1. A panel capable of absorbing incident solar energy at a high rate and of radiating only a small portion of the absorbed energy, said panel comprising:

(a) a continuous metallic substrate consisting predominantly of aluminum;

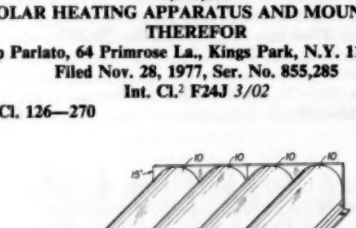
(b) an anodized layer covering a face of said substrate and being integrally bonded thereto,
(1) said layer consisting predominantly of aluminum oxide,
(2) said layer having a surface directed away from said substrate and formed with a multiplicity of pores spaced apart 0.1 to 1 μ and having a diameter of 0.1 to 0.5 μ; and
(c) a multiplicity of elongated metallic bodies respectively received in said pores and longitudinally projecting outward of said surface.

4,148,295
HORIZONTALLY MOUNTED SOLAR COLLECTOR
Dolphus H. Black, Owens Cross Roads, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Aug. 9, 1977, Ser. No. 823,061
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 **8 Claims**



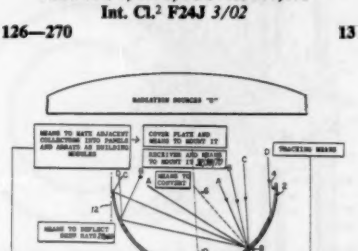
1. A solar energy collection system comprising:
(a) deflector means for receiving incident solar radiation and reflecting it downwardly in a vertical direction;
(b) a reflector in the form of a paraboloid of revolution disposed beneath the deflector means for receiving the downwardly directed solar energy and reflecting it upwardly to a focus point; and
(c) collector means at the focus point for collecting the solar energy; and
(d) said deflector means including a plurality of moveable solar energy diverting vanes mounted on a plurality of cross beams which are positioned over the reflector and which extend as chords with respect to the reflector, the plurality of vanes being disposed between the cross beams, in rows perpendicular thereto.

4,148,296
SOLAR HEATING APPARATUS AND MOUNTING THEREFOR
Philip Parlato, 64 Primrose La., Kings Park, N.Y. 11754
Filed Nov. 28, 1977, Ser. No. 855,285
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 **6 Claims**



1. Solar heating apparatus for heating fluid by solar rays comprising clear plastic members having semi-hemispherical, double-walled upper parts for receiving the transmission of solar rays, a substantially rectangular lower part having flanges extending therefrom for mounting and interconnecting said apparatus to abutting apparatus, a black metal pipe located within said apparatus so as to receive heat from said solar rays, said black metal pipe storing and transmitting said fluid to be heated by solar rays, and end means for supporting said metal pipe and interconnecting said apparatus to abutting apparatus.

4,148,297
COLLECTOR OF DIRECT DISPERSED AND REFLECTED WAVES
Benjamin F. Sherman, Jr., 6329 Mori St., McLean, Va. 22101
Filed Jul. 8, 1976, Ser. No. 703,461
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 **13 Claims**



1. A collector of direct, indirect, dispersed and reflected radiations from a remote Source, such as from the sun, comprising:
A. at least one reflector having at least one concavity with an inner reflective surface;
said concavity having:
in at least two cross-sections, taken in planes passing in different directions through the central axis of symmetry, at least one semicircle in each plane; and at least three-fold rotational symmetry;
said reflector forming a collector aperture defined by the largest plane area through which rediations pass to enter the collector, said aperture being the collector opening exposed to incoming radiations;
B. at least one radiation receiver mounted about within the boundaries of the concavity and having at least one radiations receiving surface mounted at a location in opposition to said reflector,
said receiver having a shape and dimension of surface areas in proportions to the reflector to intercept and absorb substantially all radiations from any direction reflected from the reflector
said receiver providing an areal ration of collector aperture to receiver of about four to one and greater; and
C. conduit means to deliver the absorbed radiation for useful purposes.

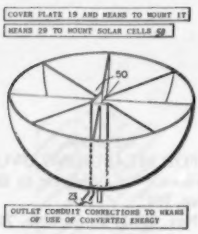
4,148,298
HEMISPHERICAL COLLECTOR OF DIRECT DISPERSED AND REFLECTED WAVES
Benjamin F. Sherman, Jr., 6329 Mori St., McLean, Va. 22101
Division of Ser. No. 703,461, Jul. 8, 1976. This application Jun. 14, 1978, Ser. No. 915,448
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 **20 Claims**

1. A hemispherical collector of direct, indirect, dispersed and reflected radiations from a remote source, such as from the sun, comprising:
A. at least one reflector having:
a. at least one hemispherical concavity with an inner reflective surface;

b. said reflector forming a collector aperture defined by the largest plane area through which radiations pass to enter the collector, said aperture being the collector opening exposed to incoming radiations;

B. means to absorb the radiations received, including at least one radiation receiver mounted about within the boundaries of the concavity and having:

a. at least one radiation receiving surface at a location in opposition to said reflector,


COVER PLATE 19 AND MEANS TO MOUNT IT
MEANS 29 TO MOUNT SOLAR CELLS 50
50
23
OUTLET CONDUIT CONNECTIONS TO MEANS OF USE OF CONVERTED ENERGY

b. a shape and dimensions of surface areas in proportion to the reflector to intercept and absorb substantially all radiations from any direction reflected from the reflector.

c. an areal ratio of collector aperture to receiver of about at least four to one and greater;

d. having at least one additional surface to intercept also all direct nonreflected radiations entering the collector from the said source; and

means to convert the absorbed radiations into energy.

4,148,299

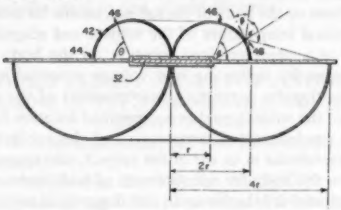
HEMITOROIDAL COLLECTOR OF DIRECT DISPERSED AND REFLECTED WAVES

Benjamin F. Sherman, Jr., 6329 Mori St., McLean, Va. 22101

Division of Ser. No. 703,461, Jul. 8, 1976. This application Jun. 14, 1978, Ser. No. 915,449

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—270 **32 Claims**



1. A hemitoroidal collector of direct, indirect, dispersed and reflected radiations from a remote Source, such as from the Sun, comprising:

A. at least one reflector having:

a. at least one hemitoroidal concavity with an inner reflective surface;

b. the shape of said reflector being developed by the rotation of a semicircle about a tangential axis parallel to the central vertical axis of said semicircle to form a hemitoroid with a central cusp;

B. means to absorb the radiations received, including at least one radiation receiver mounted located about within the boundaries of the concavity and having:

a shape and dimensions of surface areas in proportions to the reflector to intercept and absorb substantially all radiations from any direction reflected therefrom;

C. said reflector forming a collector aperture defined by the largest plane area through which radiations pass to enter the collector said aperture being the collector opening exposed to incoming radiations;

D. said means to absorb the radiations received, including at least one radiation receiver mounted about within the boundaries of the concavity at a location in opposition to said reflector;

the areal ratio of collector aperture to receiver being of about at least four to one and greater.

4,148,300

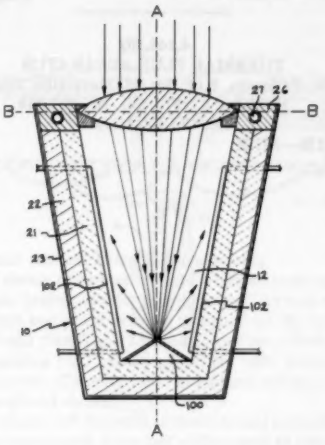
SOLAR RADIATION ENERGY CONCENTRATOR

Larry L. Kaufman, Sr., 9880 N. Hawkins Hwy., Brooklyn, Mich. 49230

Filed Sep. 1, 1977, Ser. No. 829,986

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 **3 Claims**



1. A solar radiation collector comprising in combination:

(a) a hollow chamber having an open end and an enclosed end, said hollow chamber being adapted to receive solar radiation through said open end;

(b) magnifying lens located in the open end of said chamber, said magnifying lens being adapted to receive solar radiation therethrough and focus said solar radiation into said chamber;

(c) refractive means lining the inner surface of said hollow chamber;

(d) means located in said hollow chamber to reflect the solar radiation received into said chamber onto the refractive means;

(e) heat exchange means adjacent said refractive means.

4,148,301

WATER-BORNE ROTATING SOLAR COLLECTING AND STORAGE SYSTEMS

C. Brent Cluff, 5525 N. Grande, Tucson, Ariz. 85704

Filed Sep. 26, 1977, Ser. No. 836,356

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 **16 Claims**

1. An improved heat exchange means comprising:

a floating platform,

an array of juxtapositioned reflectors mounted on the top of said platform,

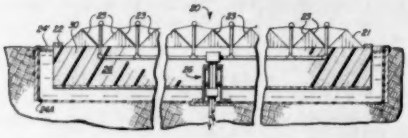
each of said reflectors having a reflecting surface,

means for mounting each of said reflectors in a parallel arrangement on said platform,

at least one fluid-bearing tube mounted on said platform and extending longitudinally of said reflectors on said platform and approximately disposed with the axis of at least

a portion of said tube in the focal zone of at least two of said reflectors, and

means for moving said platform along said given path to orient and maintain said platform and said reflectors approximately in a plane containing the sun's center,



whereby the reflection of the sun's rays are concentrated by at least two of said reflectors in a line image along said portions of said tube.

4,148,302

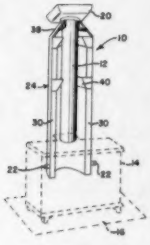
THERMAL FLUE APPARATUS

Tommy W. Patterson, P.O. Box 25, Hayesville, Ohio 44838

Filed Jul. 5, 1977, Ser. No. 812,749

Int. Cl.[2] F23J *11/00*

U.S. Cl. 126—307 R **7 Claims**



1. A heat deflector and safety device for use in combination with a vertically positioned flue positioned in a room and connecting to a combustion chamber and comprising a double walled shield of substantially U-shape in section, which shield has open upper and lower ends and which encompasses over 180° of the periphery of an associated flue, said shield having spaced inner and outer walls,

means securing said shield to said flue but spaced therefrom and with an open front of said shield facing towards the center of the room,

a conically shaped collar member connecting to the inner wall of said shield and extending upwardly to said flue to divert air flowing upwardly between said shield and said flue out into the room, and

a conical neck section having an open front connecting the interior of said shield at its upper end to the outer surface of said flue, which neck section has a front portion that is open to the room to discharge heated air thereto.

4,148,303

METHOD OF ASSESSING INTENTIONAL MUSCULAR DISABILITY

Leonard A. Cohen, 15951 Harden Cir., Southfield, Mich. 48075

Filed Sep. 9, 1976, Ser. No. 721,845

Int. Cl.[2] A61B *5/05*

U.S. Cl. 128—2 R **6 Claims**

5. A method of detecting the intentional disabling of a muscle comprising the steps of:

measuring the neuromuscular activation of a muscle which is synergist to said disabled muscle by recording the integrated electromyogram of said muscle when performing a predetermined work task,

measuring the neuromuscular activation of a control muscle corresponding to said synergist muscle when performing said work task by recording the integrated electromyogram of said muscle when performing said work task, and

comparing said integrated electromyograms of said synergist muscles to derive the relative activation of each muscle.

4,148,304

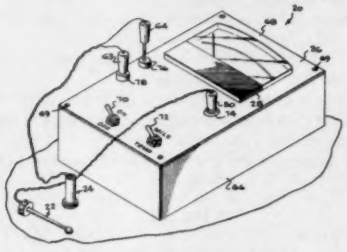
DEVICE FOR MEASURING OVULATION

Leland G. Mull, Vienna, Va., assignor to BMD Development Trust, Washington, D.C.

Filed Nov. 29, 1976, Ser. No. 745,989

Int. Cl.[2] A61B *5/05*

U.S. Cl. 128—2 R **2 Claims**



1. A device for deriving improved data for determining the time of ovulation of a female subject, said device comprising in combination means for measuring a predetermined voltage potential and adaptable for placement between two spaced apart locations on the body of the subject, means for measuring a pedetermined temperature of the subject and adaptable for placement at a predetermined location on the body of the subject, means for indicating said voltage potential and said temperature thereby permitting determination of the time of ovulation of the subject, said predetermined location for measuring the predetermined temperature of the subject is the tympanic membrane in an ear of the subject, said spaced apart locations on the body for measurement of said predetermined voltage potential are the forehead and fingertip of said subject, said means for measuring said predetermined voltage potential includes electrodes placed in contact with the body of the subject at said predetermined locations, said means for measuring said predetermined temperature includes a thermistor placed in contact with the body of the patient, and said indicating means includes electronic means comprising a pair of high input resistance amplifiers having inputs connected to said electrodes, a tuned filter network receiving an input from an output of said resistance amplifiers, meter means for receiving an input from the output of said filter network to visually display an output which indicates the voltage potential on said electrodes, a temperature sensitive bridge having four legs with resistors in three legs thereof and said thermistor as the forth leg thereof, and a voltage potential across two legs thereof with an output from said temperature supplied from across two alternate legs thereof, an amplifier to receive the output from said temperature sensitive bridge and supply an input to said meter means for visually displaying an output which indicates the temperature of said thermister.

4,148,305

CATHODE FOR POLAROGRAPHIC MEASUREMENTS IN PHYSIOLOGICAL MEDIUM

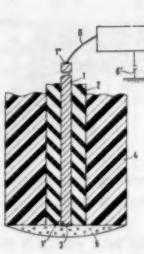
Helmut Reichenberger, Brand, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 2, 1977, Ser. No. 773,603

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1976, 2613355

Int. Cl.[2] A61B 5/00, 5/05

U.S. Cl. 128—2 E 10 Claims



1. In a cathode for polarographic measurements in physiological medium, such as for measuring oxygen partial pressure in a human or animal body, comprised of an elongated insulated conductive cable, having a distal end thereof operationally connected to an electrical source and a signal display or processing means, and having a proximal end thereof covered with an oxygen-permeable electrically conductive membrane and operationally connected with an anode via a physiological medium; the improvement comprising:

wherein said conductive cable has an elongated substantially round filament therein comprised of an electrically conductive non-precious material, said filament having a definite diameter dimension less than that of said conductive cable, and

a relatively thin layer of a precious metal coating positioned directly on a proximal end face of said filament, said precious metal thin layer having a diameter dimension substantially equal to that of said filament.

4,148,306

METHODS AND APPARATUS FOR TESTING AND MEASURING OF PSYCHOLOGICAL SUGGESTIBILITY COMPONENTS

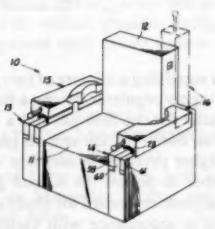
Thomas H. Mandl, Oststrasse 20, 4005 Meerbusch 1, Fed. Rep. of Germany

Filed Jun. 28, 1977, Ser. No. 810,809

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1976, 2629361

Int. Cl.[2] A61B 5/16

U.S. Cl. 128—2 N 15 Claims



1. In apparatus for measuring a subject's psychological suggestibility component, support means for supporting a part of a subject's body, stimulus means associated with said support means for administerinng a certain physical stimulus to said body part such as to produce a reaction in proportion to the subject's psychological suggestibility component, and detection means associated with said support means for detecting when said reaction exceeds a certain threshold value.

4,148,307

TUBULAR MEDICAL INSTRUMENT HAVING A FLEXIBLE SHEATH DRIVEN BY A PLURALITY OF CUFFS

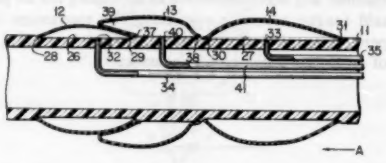
Mikio Utsugi, Machida, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Dec. 22, 1976, Ser. No. 753,487

Claims priority, application Japan, Dec. 26, 1975, 50-179601[U]

Int. Cl.[2] A61B 1/00

U.S. Cl. 128—4 9 Claims



1. A tubular medical instrument comprising:

a flexible sheath to be inserted into a human body cavity, at least one flexible tubular propellent cuff having end portions, said end portions being mounted on the outer surface of said sheath and adapted to contain a fluid, means for supplying fluid to said propellent cuff, tubular drive cuff disposed adjacent to said propellent cuff on the outer surface of said sheath,

a tubular return cuff disposed adjacent to said propellent cuff and opposite to said drive cuff with respect to said propellent cuff,

said drive and return cuffs being adapted alternately to have a fluid supplied thereinto to expand radially and drawn therefrom to be flattened, means for supplying and withdrawing fluid from said drive and return cuffs, and said propellent cuff having a width greater than the distance between said mounted end portions such that said propellent cuff is normally folded along a circular line over a flattened one of said drive and return cuffs with a folded back portion of said propellent cuff lying on said flattened one of said drive and return cuffs, said propellent cuff being progressively deformed toward the other of said drive and return cuffs with the outer surface of said propellent cuff kept in contact with the inner surface of said human body cavity as fluid is introduced into said one of said drive and return cuffs and drawn from said other of said drive and return cuffs, and being finally folded along another circular line over said other of said drive and return cuffs with a newly folded back portion lying on said other drive and return cuffs now flattened, said propellent cuff being adapted to move said tubular instrument in said human body cavity in the opposite direction to the direction in which said propellent cuff is deformed progressively.

4,148,308

MOUTHPIECE WITH A TONGUE RETRACTOR

William J. Sayer, 1618 Willow Rd., Palo Alto, Calif. 94304

Filed May 31, 1977, Ser. No. 801,580

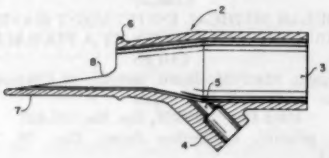
Int. Cl.[2] A61B 13/00

U.S. Cl. 128—15 14 Claims

1. A mouthpiece with a tongue retractor, comprising:

an open ended tubular member defining an air passage in-

cluding means at one end insertable in a conscious person's mouth and about which said person may voluntarily place his lips in an air-tight manner for preventing a passage of air between said lips and said tubular member an opposite end of said tubular member adaptable for use in evaluating a persons respiratory process; and



means forming a tongue retractor having a blade-like shape extending from an edge of said one end of said tubular member substantially parallel to the wall of the tubular member and non-obstructive to air exiting the air passage, said tongue retractor restricting the movement of said person's tongue and preventing it from obstructing a flow of air through said tubular member.

4,148,309

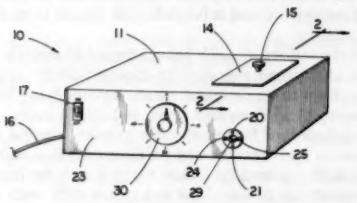
PERSONAL HYGIENE DEVICE

Peter R. Reibel, 4363 Monitor Dr., Indianapolis, Ind. 46220

Filed Jun. 3, 1977, Ser. No. 803,210

Int. Cl.[2] A61H *1/00, 9/00*

U.S. Cl. 128—24 A **19 Claims**



1. An oral and personal hygiene device for cleansing various anatomical cavities which comprises:

a fluid compartment having a drain aperture therein;

means for generating ultrasonic vibrations including an ultrasonic transducer;

an ultrasonic implement constructed of a size and shape so as to be insertable within one of said anatomical cavities, said ultrasonic implement enclosing said transducer and having a passageway therethrough for the passage of fluid to fill said cavity;

a fluid delivery device connected between said drain aperture and said ultrasonic implement for the delivery of fluid from said compartment to the cavity into which said ultrasonic implement is inserted;

said ultrasonic implement communicating ultrasonic vibrations from said transducer to the fluid filling said cavity whereby ultrasonic vibrations are transmitted in the form of cavitating action through the fluid to all internal surfaces of said cavity while said ultrasonic implement remains virtually stationary; and

a timer electrically coupled to said generated means for controlling the duration of ultrasonic vibrations.

4,148,310

DEVICE FOR PROTECTION AGAINST SEXUAL ASSAULT

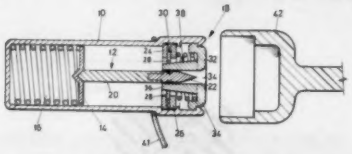
Dirk J. Coetzee, 9 Averill Str., Southdale, Johannesburg, South Africa

Filed Sep. 8, 1977, Ser. No. 831,435

Claims priority, application South Africa, Sep. 13, 1976, 76/5464

Int. Cl.[2] A61B *19/00*

U.S. Cl. 128—138 R **7 Claims**



1. A device for personal protection against sexual assault comprising a tube which is open at one end and closed at the other and adapted for insertion into an orifice in the body of a person, a weapon in the tube which is movable between a first position in which it is fully retracted into the tube and a second position in which it at least projects from the open end of the tube, means in the tube biasing the weapon towards its second position and a pressure activated trigger at the open end of the tube adapted releasibly to hold the weapon in its first position against the bias of the biasing means.

4,148,311

GAS MIXING APPARATUS

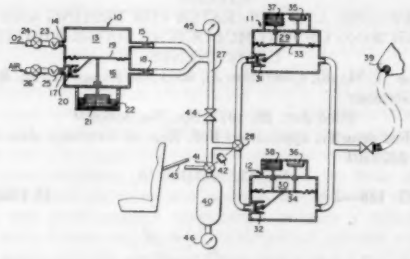
Richard C. London, Charlbury; Alexander J. F. MacMillan, Church Crookham, both of England, and Henry L. Roxburgh, Alderney, Channel Islands, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 18, 1977, Ser. No. 798,253

Claims priority, application United Kingdom, May 6, 1975, 19036/75; May 24, 1976, 21497/76

Int. Cl.[2] B63C *11/16*

U.S. Cl. 128—142.2 **38 Claims**



1. Apparatus for supplying a mixture of two gases at pressure and comprising a supply regulator having a first chamber with an inlet and an outlet for the first gas and a second chamber with an inlet and an outlet for the second gas, control means responsive to a higher pressure in said first chamber than in said second chamber to permit the second gas to enter said second chamber, adjustment means for modifying the action of said control means in accordance with variations of environmental pressure, a first restrictor in said first outlet and a second restrictor in said second outlet, said second restrictor bore being larger than said first restrictor bore, a junction connected between said first and second outlets downstream of said restrictors, a common supply duct connected to said junction,

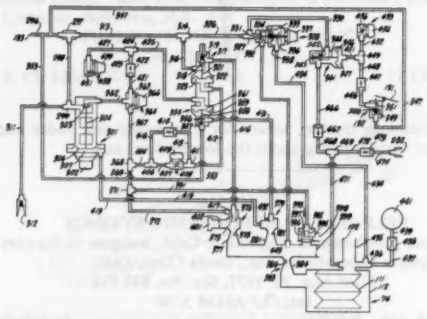
and a first demand regulator in said common supply duct permitting on demand flow of gas therethrough.

4,148,312

COMBINATION ANESTHESIA AND INTENSIVE CARE APPARATUS

Forrest M. Bird, Palm Springs, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 8, 1976, Ser. No. 730,727
Int. Cl.[2] A61M *16/00*
U.S. Cl. 128—145.6 **4 Claims**



1. In an anesthesia apparatus having an inhalation phase and an exhalation phase in its operative cycle for supplying anesthesia gases to a patient from a source of anesthesia gas, a controller having an inlet and an outlet with the inlet adapted to be connected to the source of anesthesia gases, the controller having control valve means movable between open and closed positions to control the flow of gases from the inlet to the outlet, said control valve means being in the open position during the inhalation phase and in the closed position during the exhalation phase, the controller having a diaphragm coupled to the control valve member and a chamber formed on the one side of the diaphragm, a canister, a bellows disposed in the canister, a patient adapter, means connecting the interior of the bellows to the patient adapter so that gases can be supplied from the interior of the bellows to the patient adapter and from the patient adapter to the interior of the bellows, means connecting the outlet of the controller to the interior of the canister, an exhalation valve assembly connected to the interior of the canister and having an exhalation valve movable between open and closed positions to control the flow of gases from the canister, means connected to the outlet of the controller and to the exhalation valve assembly for maintaining the exhalation valve assembly in a closed position during the inhalation phase, means connecting the interior of the canister to the chamber of the controller so that when a predetermined pressure is reached within the canister, the control valve member of the controller is moved to a closed position to terminate the inhalation phase and to initiate the exhalation phase, a venturi assembly including a jet disposed between the exhalation valve assembly and the interior of the canister and means for supplying a jet of gases to the venturi assembly during the exhalation phase so that the patient must exhale against a positive pressure.

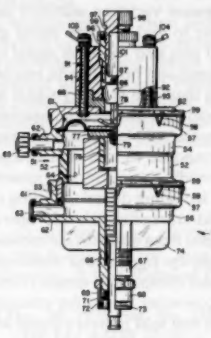
4,148,313

PATIENT BREATHING MONITORING APPARATUS AND METHOD

Forrest M. Bird, and Larry S. Martin, both of Palm Springs, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 8, 1976, Ser. No. 730,841
Int. Cl.[2] A61M *16/00*
U.S. Cl. 128—145.8 **5 Claims**

1. In a patient breathing monitoring apparatus for use with a respirator connected to a source of gas and having a breathing outlet connected to the airway of a patient for supplying inspiratory gases to the airway of the patient during the inspiratory phase and permitting discharge of gases from the airway of the patient during the expiratory phase, the monitoring apparatus comprising first and second pressure switches adapted to be placed in communication with the breathing outlet, one of said switches including means adjustable to sense a decrease in pressure in the breathing tube outlet below a predetermined value and the other of said switches including means adjustable to sense a decrease in pressure in the breathing tube outlet below a predetermined value and the other of said switches



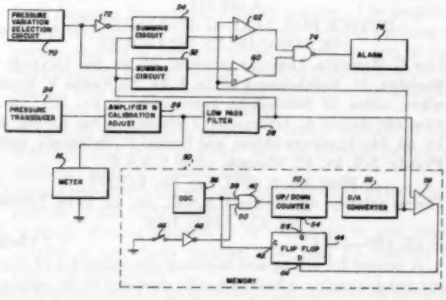
including means adjustable to sense an increase in pressure in the breathing tube outlet above a predetermined value, means coupled to the pressure switches for giving an alarm when the switches sense pressures above or below the predetermined values and means for calibrating the pressure switches including lights and circuitry connecting the lights to the pressure switches so that the light for the pressure switch for sensing a pressure below a predetermined value can be adjusted from off to flashing to calibrate the same and so that the light for the pressure switch for sensing a pressure above a predetermined value can be calibrated from flashing to off to calibrate the same.

4,148,314

BLOOD PRESSURE ALARM SYSTEM FOR DIALYSIS MACHINES

Chieh-Kung Yin, Lindenhurst, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 18, 1976, Ser. No. 733,585
Int. Cl.[2] A61M *1/03*
U.S. Cl. 128—214 E **7 Claims**



1. In a dialysis machine an alarm means operative in response to blood pressure changes to operate, said alarm means including in combination:

blood pressure sensing means operative to develop a pres-

sure signal which varies in accordance with blood pressure;

memory means operative to receive said pressure signal, said memory means including storage means for storing said received pressure signal in digital form as a digital signal, and means coupled to said storage means operative in response to said stored digital signal to develop a memory signal;

pressure variation selection means operative to develop a variation signal representing blood pressure variation limits;

comparison means coupled to said sensing means, memory means and pressure variation selection means and operative in response to said pressure signal greater than said memory signal plus said variation signal to develop a first comparison signal and operative in response to said pressure signal less than said memory signal minus said variation signal to develop said first comparison signal; and

control circuit means coupled to said comparison means and operative in response to said first comparison signal to operate for providing an alarm, said means coupled to said storage means including digital to analog converter means coupled to said storage means and operative to receive said digital signal from said storage means and to develop an analog memory signal, said memory means further including second comparison means coupled to said digital to analog converter means for comparing said analog memory signal and said pressure signal and developing a second comparison signal in accordance with the difference therebetween, and logic circuit means coupled to said storage means and said second comparison means and operative in response to said second comparison signal to vary said digital signal, said logic means including an oscillator for developing clock signals, gate means selectively operative to couple said clock signals to said storage means, and bistable means coupled to said second comparison means and operative in response to a second comparison signal having a first value to develop a first bistable signal and a second comparison signal having a second value to develop a second bistable signal, said storage means including counter means for storing said digital signal, said counter means coupled to said gate means and bistable means and operative in response to selective operation of said gate means to count said clock signals and vary said stored digital signal, said counter means counting up in response to said first bistable signal and down in response to said second bistable signal.

4,148,315

DEVICE FOR TAKING AND INJECTING MICROSAMPLES OF LIQUID

Viktor G. Berezkin, Leninsky prospekt, 40, kv. 54; Alexandr S. Bochkov, M. Kolkhoznaya ulitsa, 1, kv. 73; Vadim V. Brazhnikov, ulitsa 25 Bakinskikh komissarov, 3, kv. 327, all of Moscow; Alexei A. Artamonov, Ljubertsy, ulitsa Kirova, 45, kv. 50, Moskovskaya oblast, and Leonid G. Balasanov, ulitsa Pravdy, 3/1, kv. 42, Moscow, all of U.S.S.R.

Filed Jul. 6, 1977, Ser. No. 813,277

Claims priority, application U.S.S.R., Jul. 21, 1976, 2390545

Int. Cl.[2] A61M *5/00*

U.S. Cl. 128—218 C **7 Claims**

1. A device for taking and injecting microsamples of liquid comprising: a casing; a hollow needle mounted to the casing; a plunger accommodated in the needle for movement and partial telescoping beyond the limits of the needle at the front end thereof; said plunger having a plurality of bores spaced lengthwise of the plunger and arranged in such a manner as to have skew axes, the bores serving for successively taking a plurality of samples; a slider mounted in said casing and rigidly secured to the rear end of said plunger; a handle of said slide to impart

reciprocations thereto; means for preventing said slider and plunger from rotating about the longitudinal axis.

4,148,316

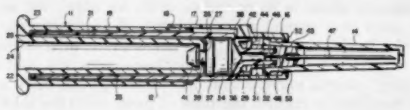
SELF-SEALED HYPODERMIC SYRINGE

Piritheos Xanthopoulos, Cupertino, Calif., assignor to Stewart-Naumann Laboratories, Inc., Santa Clara, Calif.

Filed Aug. 29, 1977, Ser. No. 828,516

Int. Cl.[2] A61M *5/00*

U.S. Cl. 128—218 S **11 Claims**



1. A self-sealed hypodermic syringe, comprising

an inner barrel having a rear open end,

a front wall in said inner barrel, whereby a chamber is defined between said front wall and said rear open end within said inner barrel,

a boss extending from said front wall having a bore therethrough in communication with said chamber,

a skirt extending from said inner barrel concentric with and spaced from said boss, whereby an annular groove is formed therebetween,

means for closing said bore formed to fit over said skirt,

a unitary double walled stem member having an inner wall and an outer wall spaced therefrom, thereby forming an annular space therebetween having a rear closed end and a front open end,

said annular space being formed to accept said inner barrel, whereby said stem member is movable between a telescoped position with said front open end proximate to said front wall and an extended position remote therefrom, and a rear tortuous path between the surrounding environment and said chamber is formed extending along the interfaces between said outer wall and said inner barrel outside surface, said rear closed end of said annular space and said rear open end of said inner barrel, and said inner wall and said inner barrel inner surface,

a front stem member wall adjacent to said front open end having a hole therethrough,

a resilient plunger formed for sliding motion within said inner barrel between said front wall and said rear open end,

a protrusion on said resilient plunger having an enlarged end and a neck portion substantially of the same dimensions as said hole, so that when said enlarged end is deformed and forced through said hole with said neck portion engaged therein, said resilient plunger is retained in said front stem wall,

a tab on said means for closing said bore extending rear-

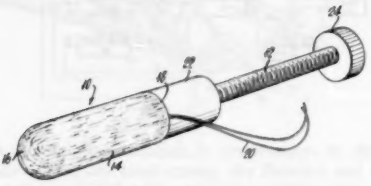
wardly to overlie said outer wall when said stem member is in said telescoped position,

and a breakable bond between said tab and said outer wall, whereby said bore is maintained closed and said stem member is maintained in said telescoped position isolating said chamber from the surrounding environment until said bond is broken prior to use.

4,148,317
REDUCED LENGTH TAMPON-APPLICATOR ASSEMBLY

Michael Loyer, Somerville, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed Sep. 14, 1977, Ser. No. 833,201
Int. Cl.[2] A61F *15/00*
U.S. Cl. 128—263 **11 Claims**



1. A tampon-applicator assembly comprising:

a generally cylindrical absorbent tampon having a proximal end and a distal end;

a tampon bore within the tampon, longitudinally extending from said distal end toward said proximal end;

a retainer affixed to said distal end and having a retainer bore therethrough coaxial with said tampon bore;

a longitudinally extending plunger adapted to be stored substantially within said bores prior to use and to be reciprocated substantially out of said tampon bore in the direction of from the proximal end toward the distal end when the tampon is to be inserted;

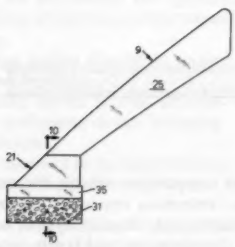
first means for said plunger to bear against said retainer when pressure is applied to said plunger in the direction of toward the proximal end during insertion; and

second means for said retainer to bear against said tampon when pressure is applied to said plunger in the direction of toward the proximal end during insertion.

4,148,318
TOOL FOR SURGICAL PREPARATIONS HAVING AN INTERNAL SUPPLY OF ANTISEPTIC SOLUTION

Leonard J. Meyer, Antioch, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 27, 1977, Ser. No. 864,174
Int. Cl.[2] A61M *35/00*; B43K *5/14*
U.S. Cl. 128—269 **1 Claim**



1. In a tool for surgical preparations including a base receptacle having a bottom surface adapted to receive a sponge, a handle upstanding from said base receptacle adapted for hand manipulation of said tool and a sponge affixed to said bottom surface, the improvements which comprises:

a reservoir in said base receptacle having an opening to said bottom surface and adapted to hold a predetermined amount of antiseptic solution,

a frangible cover over secured said opening to said bottom surface,

said predetermined amount of antiseptic solution contained in said reservoir by said cover,

said sponge affixed to a sponge holder means which has a pair of longitudinal grooves complementary to and slidably mounted on lateral extensions of said bottom surface of said base receptacle,

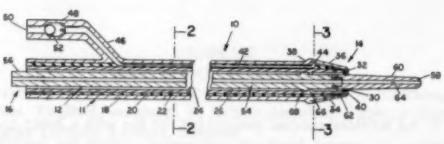
a cavity in said sponge recessed from and opening toward said bottom surface of said base receptacle, and

an upwardly extending piercing means disposed in said cavity and adapted to pierce said frangible cover when said sponge is compressed against said bottom surface of said base receptacle to thereby release said antiseptic solution from said reservoir into said cavity of said sponge.

4,148,319
URINARY RETENTION CATHETER

Richard F. Kasper, 104 Sentry Hill Rd., Monroe, Conn. 06468, and Joseph R. Carvalko, R.D. 1 Redwood Dr., Bethel, Conn. 06801

Filed Dec. 29, 1976, Ser. No. 755,259
Int. Cl.[2] A61M *25/00*
U.S. Cl. 128—349 B **12 Claims**



1. A combined inserting and cleaning stylet for use with a retention drainage catheter adapted to be inserted into and retained in the bladder for the continuous drainage of waste material therefrom, the catheter being an elongate flexible cannula having an open and unobstructed distal end to communicate the interior of the bladder with a drainage lumen extending through the cannula from the distal end thereof to the exterior of the urethra, the cannula also having means on an inner wall surface of the drainage lumen adjacent the distal end defining a portion of the drainage lumen of different diameter than the rest of the drainage lumen thereby forming an abutment for the stylet, said stylet comprising:

A. an elongate flexible body member of substantially uniform diameter throughout a major portion of its length,

B. means adjacent one end of said body member defining a portion thereof of different diameter than the rest of the body member and defining an abutment means adapted to engage with the abutment means disposed in the cannula when said stylet is inserted therein,

C. a tapered tip element defining a minor portion of the length of said body member, said tip element having a relatively smooth rounded end,

D. means removably connecting said tip element to the other portion of said body member, and

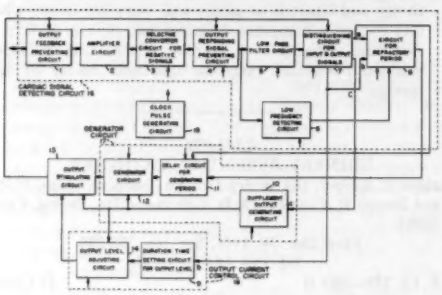
E. a brush element adapted to be connected to said other portion of said body member after said tip element is removed therefrom,

whereby said stylet is used to insert the catheter by cooperating engagement between said abutment means on said stylet and the abutment means in the cannula, and thereafter is used to clean the cannula by removing said tip element from said other portion of said body member and thereafter connecting said brush element thereto.

4,148,320
ARTIFICIAL CARDIAC PACEMAKER

Yuichi Ohara, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Continuation of Ser. No. 556,164, Mar. 6, 1975, abandoned. This application Jan. 21, 1977, Ser. No. 760,979
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—419 PG 6 Claims

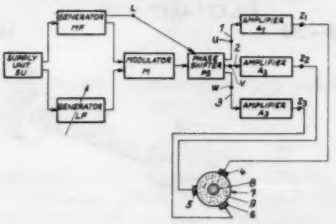


1. An artificial cardiac pacemaker for use with a heart comprising: an output feedback preventing circuit for applying stimulating output pulses developed by the pacemaker to a heart while preventing said pulses from being fed back into the pacemaker and for detecting cardiac signals from the heart; a selective converter circuit connected to said output feedback preventing circuit and operative to convert negative cardiac signals from the heart into positive signals; a low pass filter circuit connected to said selective converter circuit for filtering the signals to eliminate high frequency noise; a resettable circuit for the refractory period connected to receive the filtered signals and operative to establish a predetermined refractory period after each QRS complex signal from the heart and provide a corresponding trigger signal; a delay circuit connected to receive the trigger signals are responsive thereto to provide a trigger pulse after a predetermined time delay; a generator circuit connected to said delay circuit and responsive to the trigger pulses to accordingly generate output pulse signals; an output stimulating circuit having an input connected to said generator circuit and an output connected to said output signal preventing circuit and being driven by the pulse signals to produce corresponding stimulating output pulses suitable for heart stimulation; a low frequency detecting circuit connected to receive the signals from said selective converter circuit and operative to detect therefrom signals below a predetermined frequency corresponding to T-wave signals and responsive to such detection to develop reset signals and apply the reset sinals to said resettable circuit to reset the same; and a clock pulse generating circuit for generating clock pulses for use as a time base and connected to apply said clock pulses to each of said selective converter circuit, low pass filter circuit, resettable circuit for the refractory period, generator circuit, low frequency detecting circuit, and delay circuit.

4,148,321
APPARATUSES AND METHODS FOR THERAPEUTIC TREATMENT AND ACTIVE MASSAGES OF MUSCLES

Oscar A. M. Wyss, Physiologisches Institut, Raemistrasse 69, 8006 Zuerich, and Aurio dit Giovanni Monti, 107a, Rte. de Grand-Lancy, 1212 Grand-Lancy, Geneva, both of Switzerland

Continuation-in-part of Ser. No. 526,970, Nov. 25, 1974, abandoned. This application Sep. 8, 1976, Ser. No. 721,491
Claims priority, application Switzerland, Nov. 26, 1973, 16588/73
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—420 A 6 Claims



1. An apparatus for treating and actively massaging muscles, comprising

first generator means for generating a sinusoidal carrier current having a frequency in the range of 3000 to 100,000 Hz,

second generator means for generating a modulating current having a frequency of less than one Hz,

modulator means coupled to said first and second generator means, said modulator means amplitude modulating said carrier current with said modulating current,

at least three electrodes for application to a portion of the body wherein muscles are to be treated, and

phase shifting means for coupling the output of said modulator means to said at least three electrodes, the application of said amplitude modulated current to the body producing without pain rhythmical contraction of the muscles at said frequency of less than one Hz.

4,148,322
LAMINATE PRODUCTS SUITABLE FOR MAKING MOLDED BRA CUPS

Salvatore Jacaruso, Maspeth, and Joseph A. Giuliano, Oyster Bay, both of N.Y., assignors to ACAR Laminators Corp., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 702,907, Jul. 6, 1976, Pat. No. 4,090,900. This application Feb. 9, 1978, Ser. No. 876,387
Int. Cl.[2] A41C *3/00*
U.S. Cl. 128—464 8 Claims

1. A laminate composition suitable for molding into one-piece bra cups, comprising oppositely disposed outer fabric layers and an intermediate fiberfill layer of non-woven staple fibers disposed therebetween, said layers being held together with a separate and distinct adhesive composition which substantially penetrates said intermediate layer to securely bond said outer fabric layers to said intermediate fiberfill layer, said outer fabric layers and said intermediate fiberfill layer compris-

ing fiber materials which shrink at approximately the same rate upon application of heat and pressure.

4,148,323

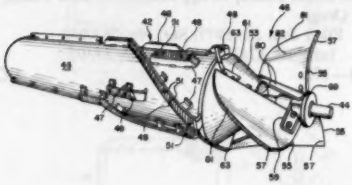
SWEPT BACK IMPELLER BLADE FOR AXIAL FLOW ROTOR

Richard E. McMillen, Geneseo; Robert L. Francis, and Richard A. DePauw, both of East Moline, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 21, 1977, Ser. No. 853,774

Int. Cl.[2] A01F *12/18*

U.S. Cl. 130—27 T **8 Claims**



1. In an axial flow combine, in combination, an elongated generally cylindrical rotor casing, the forward end of said casing being provided with a transition section designed for endwise reception of crop material, transport fins on the inner surface of said transition section, a rotor including a rotor shaft disposed with said casing in coaxial relationship therewith, said rotor being designed for rotation in a given direction, an impeller on said rotor coextensive with said transition section of the casing, said impeller composed of a plurality of impeller blades, each impeller blade having a material engaging surface which surface is defined by a base edge that extends diagonal to said rotor shaft, an outer edge that is adjacent to said transport fins on the inner surface of said transition section, and a leading edge, each leading edge defined by a radial portion emerging from the rotor shaft and a non-radial continuation of said radial portion, said non-radial portion being swept back relative to said given direction of rotor rotation, both the radial and non-radial portions of said leading edge lying in a plane that is substantially normal to said rotor shaft.

4,148,324

PERFORATING DEVICE

Ernst Müller, and Klaus F. A. Pietruska, both of Memmingen, Fed. Rep. of Germany, assignors to Imperial Group Limited, London, England

Filed Jul. 6, 1977, Ser. No. 813,280

Claims priority, application United Kingdom, Jul. 10, 1976, 28774/76

Int. Cl.[2] A24C *5/30*

U.S. Cl. 131—23 R **12 Claims**

1. Apparatus for perforating the cylindrical surface of a cylindrical smoking article to a predetermined depth, the apparatus comprising,

(a) a perforating station adapted to receive a said smoking article for perforation,

(b) a perforating device located adjacent the perforating station, the perforating device including

(i) a block holder,

(ii) a block mounted in the block holder,

(iii) a set of parallel perforating needles integral with the block,

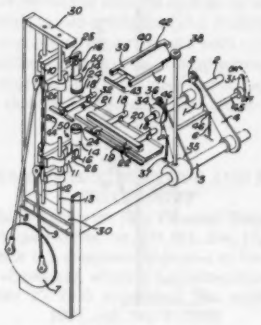
(iv) a stripper plate provided with apertures to receive and guide the needles therethrough,

(v) means for mounting the stripper plate on the block holder for movement of the stripper plate in the direction of movement of the needles, and

(vi) resilient means, cooperating with the stripper plate and the block holder, for urging the stripper plate away from the block holder,

(c) means for moving the perforating device into engagement with a said smoking article when the article is stationary at the perforating station so as to cause the cylindrical surface of the article to be perforated by the needles and for thereafter retracting the perforating device from the article, and

(d) means for controlling the depth of penetration of the needles into the article.



4,148,325

TREATMENT OF TOBACCO

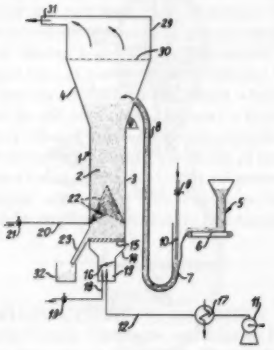
Graeme R. Solomon, and Eric J. Churcher, both of Southampton, England, assignors to British-American Tobacco Company Limited, London, England

Filed Aug. 6, 1976, Ser. No. 712,207

Claims priority, application United Kingdom, Aug. 18, 1975, 34299/75

Int. Cl.[2] A24B *3/00*

U.S. Cl. 131—134 **15 Claims**



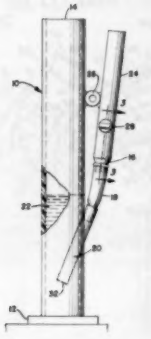
9. Apparatus for treating tobacco, comprising a columnar chamber, means for introducing air to the bottom of the chamber for maintaining a columnar bed of cut tobacco, that is a bed whose depth is greater than its mean horizontal dimension, in a fluidized state in the said chamber, the air flowing through the bed of cut tobacco with a velocity higher than the incipient fluidizing velocity but lower than the entrainment velocity, and means for introducing a treatment medium into the said fluidized bed in the chamber.

4,148,326

AUTOMATIC LOADING BONG

Ricky A. Harbaugh, 3505 Anderson Rd., Kensington, Md. 20795

Filed Mar. 28, 1977, Ser. No. 781,881
Int. Cl.[2] A24F *1/02, 1/26*
U.S. Cl. 131—173 **3 Claims**



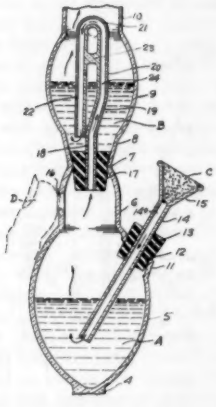
1. A smoking device comprising:
a hollow member capable of maintaining a volume of liquid therein, said hollow member containing an open end and a closed end;
a tube containing an upper end and lower end, said lower end of said tube inserted into said hollow member;
a smoking bowl inserted into the said upper end of said tube;
filler means affixed to said hollow member by a swivel joint such that one end of said filler means can be aligned with said smoking bowl, said filler means including only a single cylindrical tube.

4,148,327

WATER PIPE

Roger Graham, 721 Chesapeake Ave., Silver Spring, Md. 20910

Filed Jun. 13, 1977, Ser. No. 805,698
Int. Cl.[2] A24F *1/14*
U.S. Cl. 131—173 **2 Claims**



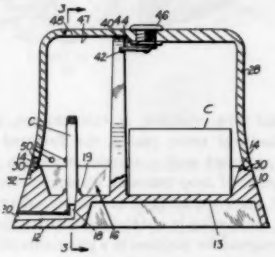
1. A water pipe for smoking comprising an elongated one-piece tubular body having a closed bottom end, a restricted open top end, a restricted intermediate portion, a bulbous portion between said bottom end and said restricted intermediate portion providing a lower water chamber, a pair of side openings in said body between said bottom end and said restricted intermediate portion, and a second bulbous portion between said restricted intermediate portion and said open top end providing an upper water chamber, a tubular stopper being mounted in one of said side openings, a bowl positioned exteriorly of said body and having a tubular portion extending through said stopper into said lower water chamber, a second tubular stopper being mounted in said restricted intermediate portion, a goose neck shaped tube being positioned in said second bulbous portion and having an end portion extending through said second stopper.

4,148,328

SAFETY SMOKER

Alvin F. Fox, South Beach, Oreg., assignor to Five Foxes, Inc., Newport, Oreg.

Filed Jan. 31, 1977, Ser. No. 763,940
Int. Cl.[2] A24F *13/00, 13/22, 15/00*
U.S. Cl. 131—175 **1 Claim**



1. A safety smoker for permitting a person to smoke a cigarette but to prevent such person if desired from having access to the cigarette, said smoker comprising
(a) base means having top and bottom surfaces and surrounding sides,
(b) a recess portion in the top surface of said base means having a bottom wall and defining side walls,
(c) cigarette holding means in the bottom of said recess arranged to receive the butt end of a cigarette and hold the cigarette in upright relation,
(d) a flexible tube having a smoking tip on one end,
(e) connecting means in said base means arranged to connect the other end of said flexible tube to said cigarette holding means whereby said cigarette can be smoked from said smoking tip,
(f) an upstanding partition on said base means extending higher than the height of a cigarette,
(g) an upstanding hollow lid for said base means open at the bottom,
(h) said lid being arranged to enclose said partition, said recess, and a cigarette in said cigarette holding means,
(i) and key operated lock means in said lid engageable with said partition in locking engagement to lock said lid closed on said base means for preventing access to the cigarette being smoked.

4,148,329

PROCESS AND COMPOSITION FOR TREATING HAIR

Michael C. Jaskowski, 226 Mt. Lebanon Blvd., Pittsburgh, Pa. 15234

Filed Aug. 17, 1977, Ser. No. 825,226
Int. Cl.[2] A45D *7/00*
U.S. Cl. 132—7 **13 Claims**

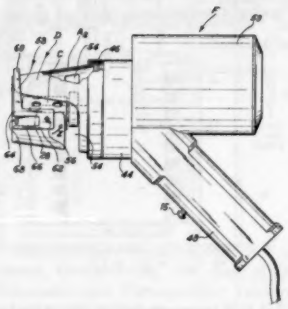
1. A hair shaping composition including an active ingredient comprised of a straight chain dialdehyde having from 2 to 6 carbon atoms.

4,148,330

MOTOR-CURLER UNIT FOR AUTOMATIC APPLICATION OF CURLERS TO THE HAIR TO BE TREATED

Vittorio Gnaga, Milan, Italy

Filed Feb. 7, 1978, Ser. No. 875,908
Claims priority, application Italy, Feb. 9, 1977, 20114 A/77
Int. Cl.[2] A45D *2/12*
U.S. Cl. 132—34 C 14 Claims



1. A motor-curler assembly for automatically curling locks of hair, said assembly comprising:

a motor unit including a rotatable shaft and a nonrotatable housing; and

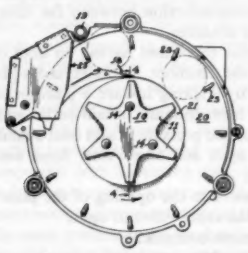
a composite curler unit adapted to be selectively assembled to and disassembled from said motor unit, said curler unit comprising an outer rotatable curler, means for selectively attaching said outer curler to said shaft for rotation therewith, an inner stationary curler selectively positionable substantially coaxially within said outer curler with a substantially annular space therebetween, means for axially fixing said inner curler within said outer curler while allowing relative rotation therebetween, means for allowing a lock of hair to be curled to be inserted into said substantially annular space, and means for selectively fixing said inner curler to said housing, whereby upon rotation of said shaft and said outer curler, said inner curler will be prevented from rotation, and a lock of hair inserted into said annular space will be wound therein around said inner curler by rotation of said outer curler.

4,148,331

COIN-AGITATING METHOD AND MEANS FOR COIN-COUNTING AND DISPENSING MACHINES

Frank G. Nicolaus, Chicago, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Filed Jun. 10, 1977, Ser. No. 805,286
Int. Cl.[2] G07D *3/14*
U.S. Cl. 133—8 R 12 Claims



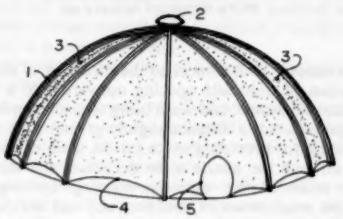
1. The method of transporting coins for counting and dispensing purposes in which the coins are fed from an inclined hopper against the face of a rotating transport disc in which the coins lodge for transport singly from a level at the bottom of the trough to a counting and dispensing station at a higher level, and the coins in the region of the interface between the disc and infeeding coins are agitated, characterized in that the agitation is effected by an agitating configuration carried by said disc and composed of material such as natural or synthetic rubber, imparting to said configuration a resilience at all points and surfaces exposed to impact by and with coins, and having a degree of stiffness operative to prevent permanent deformation of said configuration from coin impact and effective to repulse coins therefrom in stirring and agitation action.

4,148,332

DOMED MEMBRANE STRUCTURE AND METHOD OF ERECTING IT

Carl F. Huddle, 3 Kenberton Rd., Pleasant Ridge, Mich. 48069

Continuation-in-part of Ser. No. 576,101, Jun. 12, 1975, Pat. No. 4,036,244, which is a continuation-in-part of Ser. No. 399,333, May 8, 1973, abandoned, which is a continuation-in-part of Ser. No. 93,293, Nov. 27, 1970, abandoned. This application Jul. 14, 1977, Ser. No. 815,650
Int. Cl.[2] A45F *1/16*
U.S. Cl. 135—4 R 38 Claims



1. A domed membrane structure comprising a plurality of radial semi-arches forming a frame that includes two adjacent semi-arches with corresponding bights having their lower ends mounted on a base or the ground and their upper ends operatively attached to a means for interconnecting said semi-arches near the apex of the structure; a tensioned roof membrane supported by, extending between and operatively attached to said semi-arches and said base; said membrane having an inward concave curvature between the mid-points of said bights; said membrane having a shorter circumferential length from said apex to said base in a vertical plane midway between said semi-arches, than its circumferential length where it is operatively attached to said semi-arches; means for opposing deflection and flexing of said semi-arches that includes said membrane acting between said inward curvature of said membrane and said bights of said semi-arches, thus permitting the use of more economical semi-arches that can have less strength, decreased weight, smaller cross-section and increased flexibility.

4,148,333

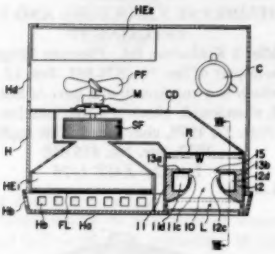
FLUID DIVERTING ASSEMBLY

Motoyuki Nawa; Yutaka Takahashi, and Masaru Nishijo, all of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 8, 1976, Ser. No. 740,243
Claims priority, application Japan, Nov. 8, 1975, 50-134282; Dec. 24, 1975, 50-176023[U]; Dec. 25, 1975, 50-180169[U]; Jan. 23, 1976, 51-6841[U]
Int. Cl.[2] F15C *1/08*
U.S. Cl. 137—834 13 Claims

1. A fluid diverting assembly comprising: a plate-like sheet of rigid material having an aperture therein forming a nozzle for issuing a main stream of fluid as the fluid passes there-

through, said sheet of material having a relatively small dimension in the direction of the thickness thereof as compared with the width of the nozzle in the direction at right angles to the direction of flow of the fluid therethrough, the edges of said sheet of material around said aperture forming said nozzle having a shape for causing the fluid from upstream of said nozzle to flow therethrough in a main stream which is substantially unconstricted and having low inertia so that the direction of flow can be diverted easily; control chamber means positioned downstream of said nozzle and in spaced relation to said nozzle for developing a pressure differential in the main stream of fluid flowing from said nozzle; a pair of spaced opposed walls at a position downstream of said control chamber means and having a shape diverging away from each other in a direc-



tion downstream with respect to the direction of flow of the main stream of fluid and opening outwardly in a direction away from said nozzle, said walls being spaced from each other at the upstream side a distance slightly greater than the width of the nozzle for providing space for the main stream of fluid passing through the nozzle to be deflected; and said control chamber means having respective openings opening into the path of the main stream of fluid between said nozzle and said wall and having respective control openings opening into said chamber means having a cross-sectional area of a size sufficient for compensating for the reduction in pressure within the corresponding control chamber means due to the fluid within such control chamber means having been drawn into the main stream of fluid as the main stream of fluid flows past the openings opening into the path of the main stream.

4,148,334

LIQUID LEVEL CONTROL SYTEM

George B. Richards, Lake Forest, Ill., assignor to Fluid Device Corporation, Highland Park, Ill.

Division of Ser. No. 610,846, Sep. 5, 1975, Pat. No. 4,028,441, which is a division of Ser. No. 840,119, Jun. 19, 1976, Pat. No. 3,730,500, which is a continuation-in-part of Ser. No. 724,385, Apr. 26, 1968, abandoned. This application Feb. 3, 1977, Ser. No. 765,430

Int. Cl.[2] F16k *21/18*

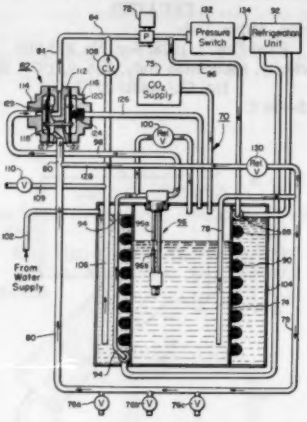
U.S. Cl. 137—389 **9 Claims**

1. A liquid level sensing system comprising:

reservoir means having an inlet and an outlet and adapted for receiving a quantity of liquid therein;

flow control means including a pressure responsive element for regulating flow at at least one of said inlet and outlet of said reservoir means according to a sensed pressure condition;

and fluid amplifier means having serially aligned inlet, interaction and outlet zones comprising an inlet flow channel positioned above the desired liquid sensing level in said reservoir with the terminus of said flow channel approximately contiguous said sensing level and oriented for directing a liquid flow transversely to the surface of the liquid in said reservoir means and further comprising outlet means separated from said inlet flow channel by the free space of said interaction region and coupled to said flow control means, the liquid from said inlet flow channel impinging on said outlet means with a first predetermined pressure when the level in said reservoir is below said sensing level and second, substantially lesser value when



the liquid in said reservoir moves above said sensing level for actuating said flow control means.

4,148,335

RELIEF VALVE IMPROVEMENT

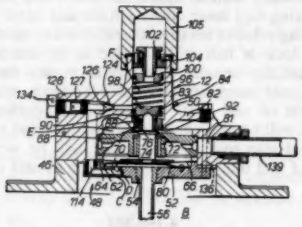
Jean-Claude de Meulemeester, Sens, France, assignor to FMC Corporation, San Jose, Calif.

Filed Mar. 9, 1977, Ser. No. 775,820

Claims priority, application France, Mar. 17, 1976, 76 07761

Int. Cl.[2] F16K *17/34*

U.S. Cl. 137—484.8 **1 Claim**



1. In a pressure relief valve assembly having

an inlet chamber,

an exhaust chamber,

a pressure responsive relief valve normally closing said inlet chamber and in response to relatively lower pressure on the side thereof outwardly of said inlet chamber movable to open communication between the inlet chamber and the exhaust chamber,

a pressure pilot valve unit having an inlet communicating with said inlet chamber, an outlet, and a pilot valve member biased by a spring toward a position in which it prevents flow from said inlet to said outlet, and in response to a predetermined pressure in said inlet chamber, said spring moves to open and allow flow from said inlet to said outlet, and,

means responsive to the opening of the pilot valve member to permit the relief valve to open,

the improvement comprising:

an external conduit connected between said outlet of the pilot valve unit and said exhaust chamber to lead fluid, exhausted from the inlet chamber via the pilot valve unit, to said exhaust chamber, said inlet communicating with

said pressure responsive valve on said one side thereof outwardly of said inlet chamber when said pilot valve is closed,

nozzle means connected to the conduit and extending into the exhaust chamber for aspirating fluid from the conduit into said exhaust chamber, and,

a port in said conduit externally of said exhaust chamber and controlled by a check valve movable against the bias of a light spring to open communication between the conduit and the atmosphere in response to the occurrence of a predetermined reduced pressure condition in the aspirating nozzle.

4,148,336

PILOT CONTROLLED MEMBRANE VALVE

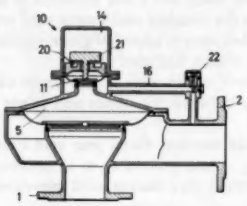
Hubert Leinemann, Braunschweig, Fed. Rep. of Germany, assignor to Braunschweiger Flammenfilter Leinemann & Co., Braunschweig, Fed. Rep. of Germany

Filed Jan. 21, 1977, Ser. No. 760,950

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1976, 2605015

Int. Cl.² F16K *31/128*

U.S. Cl. 137—491 **2 Claims**



1. A pilot controlled valve for ventilating containers or the like connected thereto, comprising a valve housing having an inlet and an outlet; a first valve seat within said valve housing connected to said inlet; first valve means movable between a closed position engaging said first valve seat and an open position and including a first membrane extending transversely through said housing and defining with the latter a valve chamber to one side of said valve seat; overpressure passage means connecting said valve chamber with said inlet; a pilot valve having a second valve seat in communication with said valve chamber, second valve means including a second membrane and movable between a closed position engaging said second valve seat and an open position to which said second valve means is moved when a predetermined pressure is reached in said valve chamber, a second outlet for said pilot valve, means biasing said second valve means to said closed position and chamber means under atmospheric pressure surrounding said biasing means and separated from said second outlet by said second membrane, said biasing means being constructed to have a surge characteristic such that the biasing force of said biasing means tending to move said second valve means to said closed position decreases with increasing distance of said second valve means from said second valve seat thereby causing substantially instantaneous movement of said second valve means to the fully open position upon reaching said predetermined pressure in said valve chamber; a pressure-equalization tube connecting said second outlet with said outlet of said valve housing; and an adjustable throttle in said pressure equalization chamber.

4,148,337

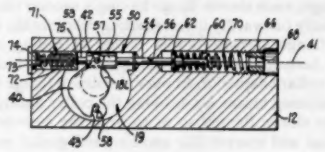
FREE DELIVERY RETURN VALVE AND ASSOCIATED SYSTEM

Charles R. Elmers, South Euclid, Ohio, assignor to Fluid Controls, Inc., Mentor, Ohio

Filed Feb. 8, 1977, Ser. No. 766,702

Int. Cl.² G05D *7/01*

U.S. Cl. 137—493 **20 Claims**



1. A control valve, comprising:

(a) a housing structure having spaced fluid ports and defining a fluid flow path between the ports;

(b) the housing structure including a valve seat disposed between the ports, the seat including surfaces defining an orifice along the path;

(c) a movable valve element positioned adjacent to and abuttable with the valve seat, the valve element being mounted for movement between a first position wherein the orifice is most restricted and a second position wherein the orifice is least restricted;

(d) biasing means urging the valve element toward the second position;

(e) sensing means responsive to fluid pressure for urging the valve element toward the first position, in opposition to the action of the biasing means, to restrict the orifice in response to such fluid pressure;

(f) fluid distribution means coactible with the valve element for minimizing fluid pressure differential on the valve element when pressure along the path on the valve seat side of the element is less than pressure along the path on the other side of the element.

4,148,338

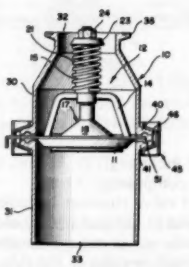
CHECK VALVE

Sigmund P. Skoli, Elmwood Park, Ill., assignor to Mojonnier Bros. Co., Chicago, Ill.

Filed Aug. 26, 1977, Ser. No. 827,895

Int. Cl.² F16K *15/06*

U.S. Cl. 137—515.7 **8 Claims**



1. A check valve of the type comprising an annular seat adapted to be mounted in an axially extended fluid-carrying line, a yoke extending axially of the line and seat, a head guide mounted to and extending axially of the yoke, a head having an axially extending slide slidably carried by the yoke head guide and a base adapted to slide axially into and out of fluid-sealing engagement with the seat; a biasing element interposed between the yoke and head to bias the base into engagement with the seat, thereby inhibiting fluid flow in an upstream direction

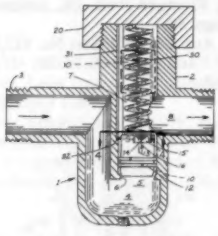
and permitting fluid flow in a downstream direction only when fluid pressure in that downstream direction is sufficient to overcome the biasing effect of the biasing element, a pair of valve sleeves extending, respectively, axially upstream and downstream of the valve seat and having mouths adapted for mating connection with adjacent fluid-carrying structure, each sleeve terminating adjacent the valve seat in a sleeve flange formation having a first surface extending diagonally radially outwardly and axially toward the valve seat and the opposite seat flange, each sleeve flange having a second surface extending radially outwardly in intersecting relationship with the first sleeve flange surface, a seat flange extending radially outwardly between the sleeve flanges, a clamp including a V-shaped collar adapted to fit over the sleeve flange first surfaces and tensioning means for drawing the collar tightly against and over the sleeve flanges so as to urge the sleeves toward the valve seat and toward one another, and gasket means carried between the sleeve flanges and the valve seat to provide a fluid-tight seal between the sleeves and the seat when the collar is drawn tightly around the sleeve flanges, the gasket means being generally U-shaped in cross-sectional configuration, the gasket legs of said U-shaped configuration extending between the seat flange and the respective sleeve flange second surfaces, and the gasket bottom of the U-shaped cross-sectional configuration covering the radial edge of the seat flange and extending between the sleeve flange second surfaces to provide a fluid-tight seal between the valve seat and the valve sleeves, each sleeve flange second surface being provided with at least one annular, axially extending recess located radially inwardly of and spaced apart from the flange periphery, and the gasket being provided with an annular, axially extending embossed portion located radially inwardly of and spaced apart from the gasket periphery and adapted to mate with each sleeve flange second surface recess to encourage proper flange-gasket mating engagement and to further encourage fluid-tight sealing action between the gasket, seat and sleeve.

4,148,339

GUIDE MEANS FOR INDICATING CHECK VALVE

Hobart Waltrip, 3444 Bonnie Lea Ct., Louisville, Ky. 40216

Filed Aug. 3, 1977, Ser. No. 821,603
Int. Cl.[2] F16K *37/00, 15/02*
U.S. Cl. 137—553 **2 Claims**



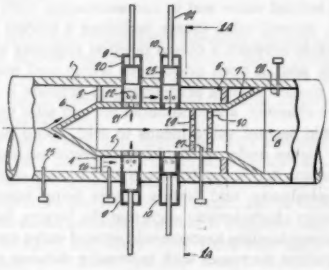
1. A steam valve including:
A. a valve body comprising:
1. an elongated valve chamber including:
a. an inlet port at one end of said chamber,
1. an annular valve seat surrounding said inlet port,
b. an outlet port opening in the side wall of said valve chamber at a point in spaced relation to said inlet port and extending through the side wall of said valve body,
B. an elongated valve closure in the form of a cylindrical plug, said cylindrical plug being fitted in said valve chamber for axial reciprocating movement in said chamber between:
1. full closed position seated against said annular valve seat,
2. full open position at a point past said outlet port,
3. a leaking position wherein said cylindrical plug is past the level of the lowest part of said outlet port thereby allowing a small leak to occur and
4. at intermediate points therebetween,
C. a spring mounted in said valve chamber and biased at the top against the top of said valve chamber and at the bottom against said cylindrical plug for urging said cylindrical plug toward said full closed position;
D. indicator means responsive to the axial movement of said cylindrical plug to visibly indicate the position of said cylindrical plug in said valve chamber, said indicator means comprising:
1. a first magnet fitted onto said cylindrical plug
a. said first magnet being fitted onto said cylindrical plug so that the center line of said magnet is offset relative to the center line of said cylindrical plug toward the side wall of said valve body;
2. an indicant comprising:
a. a second magnet, slidably mounted outside said valve body within the magnetic field of said first magnet and responsive to the axial movement of said cylindrical plug;
b. said second magnet being slidably mounted in juxtaposition to said first magnet with the unlike pole of said second magnet disposed toward the unlike pole of said first magnet so that movement of said second magnet responsive to the movement of said cylindrical plug is through magnetic attraction of said first and second magnets,
c. support means for said second magnet comprising bracket members fitted to the exterior surface of said valve body and a rod mounted in said bracket members for slidably positioning said second magnet,
E. the further improvement of guide means for said cylindrical plug which includes:
1. a groove in the wall of said valve chamber extending axially between the upper and lower portions thereof, and
2. a guide member fitted into said cylindrical plug and sliding in said groove so as to prevent spinning of said cylindrical plug during axial movement thereof.

4,148,340

DIGITAL FLUID FLOW CONTROL SYSTEM

Roger S. Hutton, Minneapolis, Minn., assignor to Process Systems, Inc., Salt Lake City, Utah

Division of Ser. No. 64,142, Aug. 3, 1970, Pat. No. 3,937,248, which is a continuation of Ser. No. 703,468, Feb. 6, 1968, abandoned. This application Jan. 30, 1974, Ser. No. 437,790
Int. Cl.[2] F16K *11/22*
U.S. Cl. 137—599 **31 Claims**



1. A fluid flow control system comprising:
a cylindrical upstream fluid chamber adapted for fluid flow in a given direction;
a cylindrical downstream fluid chamber adapted for fluid flow in the given direction, the downstream chamber

being coaxial with and different in cross-sectional area from the upstream chamber; and

a plurality of at least three individually actuatable bistable digital valve elements interconnecting the upstream chamber and the downstream chamber, the valve elements assuming only one of two states, that is, open or closed, the valve elements being disposed between the upstream and downstream chambers in a plane substantially transverse to the given direction such that fluid flows radially through the valve elements transverse to the given direction so as to form two substantially 90° bends in the flow path from the upstream chamber to the downstream chamber, the valve elements having orifice areas weighted so the smaller orifice areas follow a geometric progression and the larger orifice areas are equal.

4,148,341

LONG-DISTANCE HEATING CONDUIT

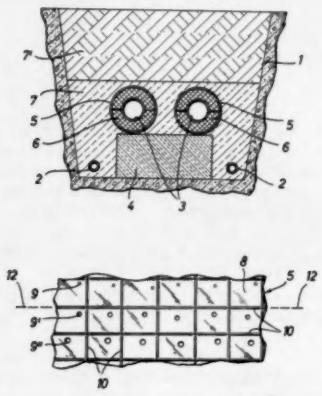
Lennart Lundbohm, Ektorp, Sweden, assignor to Gränges NYBY AB, Sweden

Continuation of Ser. No. 515,413, Oct. 16, 1974, abandoned. This application May 16, 1977, Ser. No. 796,866

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1973, 2352623

Int. Cl.[2] F16L *1/00, 9/14, 9/22*

U.S. Cl. 138—105 **30 Claims**



1. A long-distance heating conduit comprising one or more tubes which carry heating medium, laid in a long-distance conduit and are completely surrounded by heat-insulating material, and cover foils protecting the heat-insulating material from moisture, wherein the tubes carrying the heating medium are completely peripherally surrounded individually by at least one layer of heat-insulating material and are completely peripherally covered individually by at least one cover foil which extends in a closed path around each of the tubes and is provided with holes, wherein the insulating material enclosures consist of preformed bodies in the form of hollow cylindrical sections, wherein the hollow cylindrical sections enclose each of the tubes over a peripheral angle of about 120° in such a manner that three hollow cylindrical sections surround each of the tubes, wherein a portion of the cover foil which covers an upper region of each of the tubes is provided with holes of a predetermined diameter and a lower portion of the cover foil is provided with holes having a greater diameter than said predetermined diameter, and wherein support means are arranged for supporting said completely surrounded and covered tubes which tubes are completely and individually surrounded by said layer of heat-insulating material and individually covered completely by said cover foil.

4,148,342

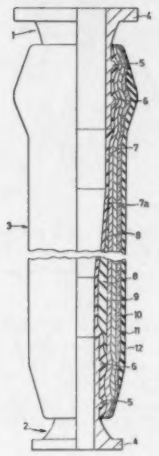
HOSE STRUCTURE AND METHOD FOR MAKING

Joseph A. Welsby, Lisburn, Northern Ireland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 690,350, May 27, 1976, abandoned. This application Dec. 7, 1977, Ser. No. 858,240

Int. Cl.[2] F16L *11/08*

U.S. Cl. 138—109 **5 Claims**



1. A unitary vulcanized transitional flexible large bore hose structure interconnected between two end fittings that match and couple to two elements having different bore diameters, which hose structure has a tapered bore extending between said end fittings from one end to the other with a resulting outer cylindrical surface of substantially uniform diameter, said hose structure comprising an elastomeric tubular layer of uniform crosssection forming the interior tapered bore of the hose interconnecting said end fittings, a layer of deformable material lying over said tubular with the thickness thereof increasing from one end to the other in the direction and for the length of decreasing bore to form a substantially cylindrical outer surface, at least one reinforcement layer surrounding said deformable layer, and an outer cover of elastomeric material forming the exterior of said hose structure.

4,148,343

BLOW PLATE AND BLOW TUBE ASSEMBLY

Thomas A. Damm, Muskegon, and Robert C. Damm, Whitehall, both of Mich., assignors to Pyle Pattern & Maf. Co., Muskegon Heights, Mich.

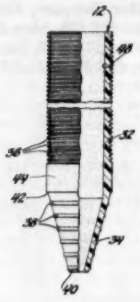
Filed Jun. 15, 1977, Ser. No. 806,772

Int. Cl.[2] F16L *9/12*

U.S. Cl. 138—178 **5 Claims**

1. A finished blow tube for use in a core-forming blow plate assembly and comprising; an elongated tube having a body portion and a tip portion defined by an integral member, attachment means disposed on said body portion to attach said blow tube to the blow plate assembly for positioning said tip portion at any one of various distances from the blow plate assembly, said tip portion being defined by a cone having a small diameter tip and a large diameter base, said integral member including a shoulder portion disposed between said body portion and said base of said tip portion, said attachment means comprising threads disposed along said body portion from the end thereof to said shoulder portion, said body portion having an inner diameter which remains constant from the

end thereof and along the threaded portion to said tip portion where the diameter decreases to the tip of said tip portion, said

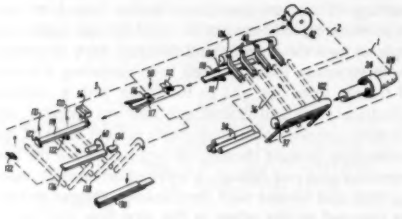


integral member being made of a plastic material and being flexible along its length.

4,148,344
PORTABLE SAWMILL

Kenneth G. Critchell, Dover, and James M. Brown, Jr., Sand Point, both of Id., assignors to The Pack River Company, Spokane, Wash.

Filed Oct. 20, 1975, Ser. No. 623,843
Int. Cl.[2] B27L *1/00*; B27C *1/00*
U.S. Cl. 144—3 R **13 Claims**

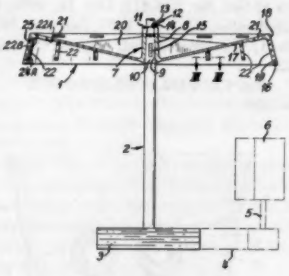


1. A portable sawmill system comprising at least three elongate vehicular modules having length dimensions relatively larger than their width dimensions and adpated to be moved independently to a predetermined land site and located adjacent one another and a source of logs in a preselected geometric configuration so that a first of said modules partially overlaps a portion of a second of said modules and a third of the modules is located end to end with said second module in order that the modules in combination provide a sawmill, the first said module carrying a debarker for removing bark from a log passed axially therethrough, said debarker being intermediate the ends of said first module, a loader located upstream of said debarker on said first module for feeding logs axially along the first module toward the end of the first module overlapping the second module through the debarker, conveyor means located downstream of said debarker for receiving logs having the bark removed from the debarker, and mechanical means for moving the received logs transversely from the receiving means on said first module to a preselected position superimposed over the second module and dropping said logs individually onto said second module, said second module carrying means for engaging and securing the logs dropped individually onto the second module and setting the engaged logs in position for sawing, a saw carriage adapted to move reciprocally on said second module along an elongate path parallel to the set log adjacent the setting means, a saw mounted to the saw carriage and adapted to saw off a section of the log as the log carriage moves along the elongate path, means mounted on said second module for conveying each log section axially along the length of the second module toward the third module, and means at the end of said second module adjacent the third module for edging each log section individually to form a board, said third module carrying conveyor means at the end of said third module proximate the second module for receiving each board from the edging means and conveying said log sections individually along the third module to a preselected position, means on said third module at said preselected position for trimming any substantial taper from the board, and means for unloading the trimmed board from the trimming means transversely and off the side of said third module.

4,148,345
PRODUCTION OF WOODWOOL

Bernard T. Rogers, Braes, Ullapool, Ross-shire, Scotland

Filed Jun. 16, 1977, Ser. No. 807,301
Claims priority, application United Kingdom, Jun. 24, 1976, 7667/75
Int. Cl.[2] B27C *1/12*; B37L *11/04*
U.S. Cl. 144—185 **14 Claims**

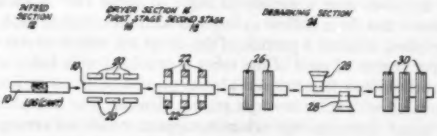


1. A method of producing woodwool, comprising:
arranging and supporting timber stock at an orientation such that the general direction in which the grain of the stock runs is substantially parallel to a tangent to a circular pathway, wherein the circular pathway is defined around a vertical axis;
moving a cutting edge around side circular pathway for causing the cutting edge to sever strands of woodwool as the cutting edge passes the timber stock;
orienting the cutting edge, as it is moved, such that the upper end of the cutting edge is closer to the axis of said circular pathway than the lower end of the cutting edge, and causing the cutting edge to sever strands of woodwool from a side of the timber stock that is parallel to the orientation of the cutting edge.

4,148,346
METHOD OF AND APPARATUS FOR DRYING AND DEBARKING LOGS

O. Vincent Scarnecchia, 3271 Amelia Dr., Mohegan Lake, N.Y. 10547

Filed Jun. 14, 1976, Ser. No. 695,933
Int. Cl.[2] B27L *1/00*
U.S. Cl. 144—311 **9 Claims**



1. A method of drying and debarking a log or cant, comprising: passing the log through a first electrical field created by dielectric means and of sufficient strength to heat the moisture

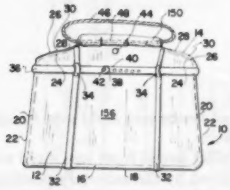
in the log or cant and cause the moisture to move outwardly, passing the log or cant through a second electrical field concentrated on the bark to thereby produce a gas buildup of liberated moisture between the cambium and the bark to cause ionization and partial separation of the latter from the cambium, and subjecting the log or cant to a brushing action to thereby remove the bark partially separated by said second electrical field.

4,148,347

EXPANDABLE SHOPPING BAG

Florence Seaman, 1039 Cecile Dr., Port Moody, British Columbia, Canada

Filed Mar. 3, 1978, Ser. No. 883,319
Int. Cl.[2] A45C *3/04*
U.S. Cl. 150—1.7 **8 Claims**



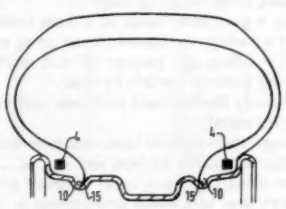
1. An expandable shopping bag comprising a flexible pouch, said pouch having an open mouth portion, the marginal edge of said pouch adjacent said open mouth portion having a pair of opposed passageways therein extending parallel to said marginal edge, each of said passageways having a flexible string-like band passing therethrough, a flexible strap, means to removably secure portions of said flexible strap to the exterior surface of said pouch wherein said flexible strap extends parallel to said open mouth portion, means to removably fasten one end of said flexible strap to selected portions of the length of said strap, means to removably fasten both ends of said flexible strap to said pouch such that said flexible strap extends athwart said open mouth portion.

4,148,348

TIRE AND WHEEL RIM ASSEMBLIES

Tom French; Thomas Holmes, both of Sutton Coldfield; William F. Mitchell, Coventry, and Michael J. Kenney, Sutton Coldfield, all of England, assignors to Dunlop Limited, London, England

Filed May 27, 1977, Ser. No. 801,319
Claims priority, application United Kingdom, Jun. 4, 1976, 23099/76; Sep. 24, 1976, 38670/76; Sep. 24, 1976, 39672/76; Mar. 1, 1977, 8501/77; Mar. 4, 1977, 9161/77
Int. Cl.[2] B60C *7/24*
U.S. Cl. 152—379.1 **75 Claims**



1. A tire and wheel rim combination capable of operating in a substantially deflated condition without the tire becoming dislodged from its position on the rim comprising:

(a) a circular wheel rim having, in cross-section, a pair of radially outwardly extending flanges; a pair of bead seats immediately adjacent the flanges having a bead seat diameter in a first annular plane; a radially inwardly extending open well located between said bead seats, the depth of the open well from said first annular plane being at least as great as the radial height of the flanges above said plane so that a tire can be mounted on the rim by use of the open well;

(b) a tire mounted on said rim and defining therewith a chamber for inflation, said tire having a tread portion and a pair of sidewalls terminating in a pair of beads fitted upon the rim bead seats, each tire bead having a substantially inextensible annular bead reinforcement embedded therein; and a bead toe;

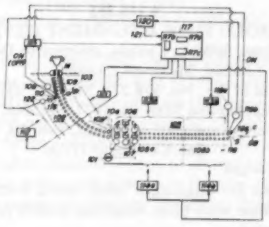
(c) means on said rim and tire to prevent at least one of the tire beads from being dislodged from its rim bead seat into the open rim well when the tire is operated at normal driving speed in a deflated condition but permitting the tire to be mounted on the rim bead seats by inflation pressure and demounted therefrom by exerting an axially directed force against the tire bead, said means comprising a circumferential groove in the rim adjacent at least one bead seat in the area between the bead seat and the open well; said means further comprising the bead toe extending axially inward of the bead and radially inwardly of said first annular plane and into its associated rim groove, said toe being flexible in a direction perpendicular to its length to allow tire fitting and having substantial form stiffness in the direction of its length such that when an axially inward force at the tread portion is applied to the bead by the tire sidewall in the ground contacting portion of the tire circumference, a substantial radially and axially outwardly directed force is generated at the annular reinforcement, the generated force tightening the annular reinforcement and retaining the bead.

4,148,349

METHOD FOR CONTROLLING SLIPPAGE BETWEEN ROLLS AND A SLAB IN A CONTINUOUS COMPRESSION CASTING APPARATUS

Yutaka Sumita, No. 2226, Higashiakeno, and Seiichi Watanabe, No. 2426-2, Higashiakeno, both of Ohita City, Ohita Pref., Japan

Filed May 5, 1977, Ser. No. 794,184
Claims priority, application Japan, May 8, 1976, 52/373; May 8, 1976, 52/374
Int. Cl.[2] B22D *11/16*
U.S. Cl. 164—4 **7 Claims**



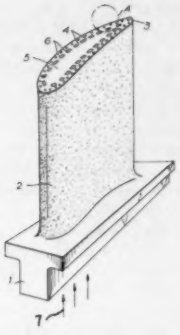
1. A method for controlling slippage between a slab being cast and driving pinch rolls provided upstream of a straightening point and braking rolls provided downstream of the straightening point in a slab-guiding part of a continuous casting apparatus, comprising driving slab being cast by said driving pinch rolls and braking said slab by said braking rolls for guiding said slab and applying compression in the longitudinal direction of the slab to the part of said slab between the driving pinch rolls and the braking rolls, detecting slippage between the slab and one of said rolls, and reducing the braking action of the braking rolls in response to detection of slippage until the slippage is obviated.

4,148,350

METHOD FOR MANUFACTURING A THERMALLY HIGH-STRESSED COOLED COMPONENT

Axel Rossmann, Karlsfeld, Fed. Rep. of Germany, assignor to MTU-Motoren und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 651,147, Jan. 21, 1976, Pat. No. 4,067,662.
This application Aug. 3, 1977, Ser. No. 821,581
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1975, 2503285
Int. Cl.[2] B22C *7/02*
U.S. Cl. 164—132 **2 Claims**



1. Method of manufacturing a thermally highly-stressed, cooled component, comprising the steps of:
(a) forming a part core having the shape of an outer shroud of said component and comprising foamed through-porous ceramic material and including inwardly projecting ridges of a compacted ceramic material;
(b) forming a complete core corresponding to the final shape of said component using a part core and fusible material in the injection mold;
(c) using molding material to make a mold around the complete core;
(d) removing said fusible material by melting;
(e) casting said component in an evacuated mold formed about the complete core; and
(f) removing said ceramic part core from said cast component through application of a chemical medium.

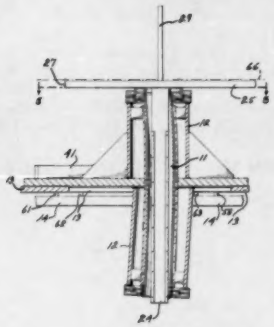
4,148,351

MOLD TUBE ALIGNMENT DEVICE

Harold R. Epps, Selkirk, Canada, assignor to Dominion Bridge Company, Limited, Montreal, Canada

Continuation of Ser. No. 578,273, May 16, 1975, abandoned.
This application Mar. 24, 1977, Ser. No. 780,839
Claims priority, application Canada, Feb. 10, 1975, 219723
Int. Cl.[2] B22D *11/00*
U.S. Cl. 164—150 **10 Claims**

1. A device for aligning a billet issued from a continuous casting machine with billet receiving rollers positioned along an arc comprising:
a pouring mold tube in the continuous casting machine, wherein said mold tube has at least one pair of vertical parallel internal walls;
a mold cooling jacket surrounding said mold tube;
an adjusting plate connected to said mold tube and said cooling jacket for adjusting the position of said mold tube relative to the rollers;
an oscillator table to which said adjusting plate is adjustably mounted;
a mold insert portion having a pair of parallel faces operatively associated with one pair of vertical parallel internal walls in said mold tube;
a vertical alignment means attached to the top of said mold insert portion which indicates when said mold insert portion and hence said mold tube is in a vertical position; and
a radial and horizontal alignment means attached to said mold insert portion which indicates when said mold insert



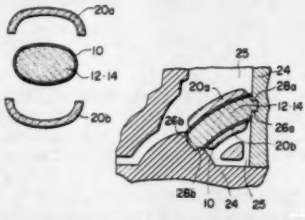
portion and hence said mold tube is radially and horizontally aligned;
so that the billet issued from said mold tube is aligned so as to be received by the arcuately positioned rollers.

4,148,352

METHOD OF PREPARING AN EXHAUST PORT ARRANGEMENT OF A CYLINDER HEAD

Kunio Sensui, and Yoshimasa Hayashi, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jul. 15, 1976, Ser. No. 705,443
Claims priority, application Japan, Aug. 15, 1975, 50/112930[U]
Int. Cl.[2] B22D *19/00*
U.S. Cl. 164—112 **1 Claim**



1. A method of producing an exhaust port arrangement of a cylinder head of the type provided with a heat insulation layer on the exterior surface of a port liner which is installed in an exhaust port passage of a cylinder head upon casting of the cylinder head, comprising the steps of:
preparing a port liner made of a heat resisting steel and having a passage to function in use as an exhaust port;
completely filling the passage of said port liner with a moulding material curable by heat;
heating mainly through said port liner said mass in the passage until cured;
preforming two individual layer members made of a moulding material curable by heat and shaped to be assembled into an elongate tubular layer of lesser axial length than said port liner and which corresponds in shape with and defines a heat insulation layer to be formed on the exterior surface of the port liner, said layer members when assembled defining two parting lines of said tubular layer and extending longitudinally of said tubular layer;
heating said individual layer members until cured;
mounting circumferentially on the exterior surface of said port liner with said mass cured therein said individual layer members cured to form at a desired axial position on

said port liner said elongate tubular layer as a heat insulation layer, of lesser axial length than the port liner;

bonding said individual layer members on said port liner;

positioning said port liner with said tubular layer thereon and said mass therein into a mould for casting a cylinder head; and

casting a cylinder head in said mold with said exhaust port liner and said tubular thereon in said cylinder head with said port liner fixed thereto.

4,148,353

CASTING DEVICE

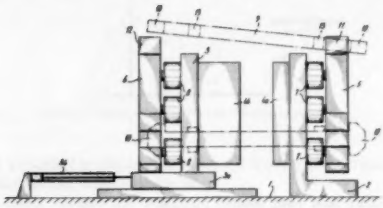
Hendrik K. Quéré, Berkensingel 2, Vaassen, Netherlands

Filed Nov. 14, 1977, Ser. No. 851,405

Claims priority, application Netherlands, Nov. 17, 1976, 7612791

Int. Cl.[2] B22D *17/26, 33/04, 17/22*

U.S. Cl. 164—341 **5 Claims**



1. A casting device comprising: a mold section attached to a fixed platen, a mold section attached to a movable platen, a drive unit for moving the movable platen in relation to the fixed platen, coupling rods connecting the movable platen to the fixed platen when the two mold sections have fully or closely approached each other, and hydraulic pressure mechanisms capable of closing completely the mold sections, and keeping them closed, against high internal injection pressure, each platen, on the side removed from the mold sections, being provided with a rigid frame and with a number of hydraulic rams, together forming said hydraulic pressure mechanism, and distributed between the platen and its rigid frame, and the coupling rods being disconnectably connected with the circumference of both rigid frames so as to connect these frames with compressive stress or tensile strength by means of the double-acting rams, when the mold sections have fully or closely approached each other.

4,148,354

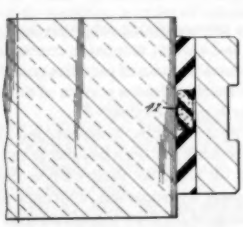
REGENERATOR AND DRIVE GEAR

V. Durga Nageswar Rao, Bloomfield Hills, Mich., assignor to Ford Motor Co., Dearborn, Mich.

Filed Dec. 23, 1977, Ser. No. 864,078

Int. Cl.[2] F28D *19/00*

U.S. Cl. 165—8 **9 Claims**



1. A rotary regenerator construction comprising a circular regenerator core having axial flow passages therein, a regenerator ring surrounding said core a ring gear carried by said ring, an elastomeric material disposed between the periphery of said regenerator core and said ring for bonding the ring to the core and for transmitting forces therebetween, said elastomeric ring being characterized by cavities or spaces therein at strategic relative positions thereby increasing the compliance of the ring with respect to the core as the ring moves relative to the core due to differential rates of thermal expansion.

4,148,355

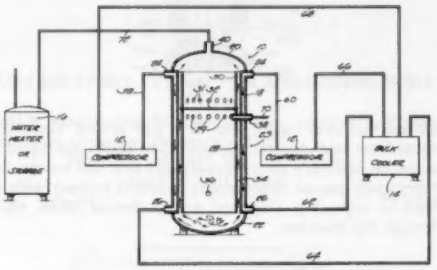
WATER HEATING SYSTEM AND COMBINED STORAGE TANK AND HEAT EXCHANGER UNIT THEREFOR

Kenneth C. Gehring, Cottage Grove, Wis., assignor to DEC International, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 734,446, Oct. 21, 1976, abandoned. This application Mar. 21, 1977, Ser. No. 779,924

Int. Cl.[2] F25B *27/02;* **F25J** *3/00*

U.S. Cl. 165—39 **18 Claims**



18. A water heating system comprising:

a source of hot fluid;

a combined storage tank and heat exchanger unit including a watertight tank means having a water inlet means in the lower portion thereof and a water outlet means in the upper portion thereof, said watertight tank means further including a cylindrical jacket wall means forming at least a portion of the outer wall of the watertight tank means, said jacket wall means having an inlet means in the upper portion thereof in communication with said source of hot fluid, said jacket wall means further including an outlet means in the lower portion thereof and a passageway means extending within the jacket wall means from said inlet to said outlet means through which hot fluid can flow, said passageway means being sealed from the interior of said watertight tank means;

a source of water in communication with said water inlet means; and

a pressure sensitive water flow control valve means located at said water outlet means, said pressure sensitive water flow control valve means operatively connected to said hot fluid inlet means so that when the pressure at said hot fluid inlet means reaches a certain predetermined maximum said valve means will open to allow heated water to flow out said water outlet means to thereby automatically control the maximum pressure of said hot fluid at said hot fluid inlet.

4,148,356

STEAM GENERATION WITH COAL

Frank B. Cramer, Mission Hills, Calif., assignor to Clean Energy Corporation, Burbank, Calif.

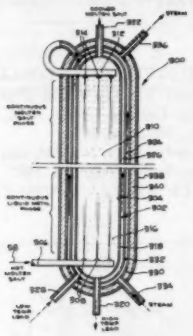
Division of Ser. No. 619,387, Oct. 3, 1975, Pat. No. 4,033,113, which is a division of Ser. No. 512,540, Oct. 7, 1974, Pat. No. 3,933,128. This application Oct. 19, 1976, Ser. No. 733,849

Int. Cl.[2] F28C *3/04*

U.S. Cl. 165—111 **4 Claims**

1. Heat exchange apparatus for direct contact heat exchanging relatively immiscible different density liquids, said appara-

tus comprising a chamber, first liquid inlet means injecting a first liquid into said chamber in highly dispersed, high shear relation into a second liquid in the chamber for coalescence beyond said second liquid, a second liquid inlet means injecting a second liquid into said chamber and into said coalesced first liquid in highly dispersed high shear relation for coalescence



beyond said first liquid, and, first and second liquid outlet means from said chamber opposite their respective liquid inlet means for recovery there of coalesced first and second liquid respectively passed differentially in direct contact with each other in oppositely dispersed and coalesced phase relation through the chamber.

4,148,357

HEAT EXCHANGER MATRIX FOR RECUPERATIVE HEAT EXCHANGE AMONG THREE MEDIA AND MODULAR HEAT EXCHANGERS COMBINING A PLURALITY OF SUCH MATRICES

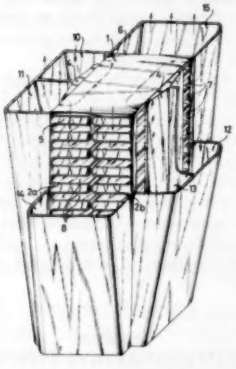
Siegfried Förster, Alsdorf, and Manfred Kleemann, Quadrath, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Julich Gesellschaft m. beschränkter Haftung, Julich, Fed. Rep. of Germany

Filed Oct. 26, 1976, Ser. No. 735,205

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1975, 2549053

Int. Cl.[2] F28F *3/02*

U.S. Cl. 165—140 **5 Claims**



1. A heat exchanger matrix unit of the folded strip type for recuperative heat exchange among three flowing media, comprising in combination:

a first metal strip (*2a*) folded over in alternate opposite directions at regular intervals so as to form two interleaved series of chambers open to opposite sides of the strip;

a second metal strip (*2b*) folded in the same manner as the first and juxtaposed to the first so that ridges of a succession of folds of each strip are each in proximity to, but normally spaced by a gap from, a corresponding ridge of the other strip and the folds and chambers of each strip are in substantially mirror-image relation to those of the other strip;

closure means (5) for closing off, at the edges of said strips, the ends of the chambers formed by said strips which are open to the side of each strip facing away from the other strip, while leaving open the strip-edge ends of the chamber between the strips;

means including cover plates over portions of the openings of the external chambers of the two strips for facilitating the leading of a flow of a first medium through the external chambers of said first strip and the flow of a second medium through the external chambers of said second strip, and

means for leading a third medium to flow through the chambers and gaps between the strips.

4,148,358

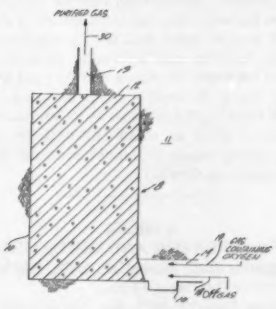
OXIDIZING HYDROCARBONS, HYDROGEN, AND CARBON MONOXIDE

Leslie E. Compton, Claremont, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Dec. 16, 1977, Ser. No. 861,238

Int. Cl.[2] E21B *43/24, 43/26*

U.S. Cl. 166—256 **16 Claims**



2. A method of decreasing the hydrocarbon, hydrogen and carbon monoxide concentration of a gas comprising the steps of:

introducing a gas containing relatively higher hydrocarbon, hydrogen and carbon monoxide concentration to a fragmented permeable mass of particles containing combusted oil shale, wherein at least a portion of the oil shale contains alkaline earth metal oxides;

reacting the hydrocarbons, hydrogen and carbon monoxide in the introduced gas with oxygen in the presence of the combusted oil shale to yield carbon dioxide and a gas having a lower hydrocarbon, hydrogen and carbon monoxide concentration than the introduced gas; reacting at least a portion of the carbon dioxide with at least a portion of the alkaline earth metal oxides; and,

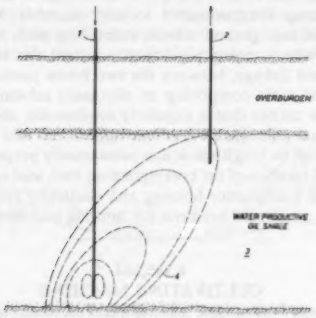
withdrawing gas having relatively lower concentration of hydrocarbons, hydrogen and carbon monoxide from the fragmented permeable mass.

4,148,359

PRESSURE-BALANCED OIL RECOVERY PROCESS FOR WATER PRODUCTIVE OIL SHALE

Dallas D. Laumbach, and Paul F. Koci, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 30, 1978, Ser. No. 873,338
Int. Cl.[2] E21B *43/24*
U.S. Cl. 166—261 **8 Claims**



1. A process for producing shale oil from a subterranean oil shale formation, which comprises:

providing means for injecting fluids into and producing fluids from an oil shale formation by opening at least one well into fluid communication with a subterranean leached-zone oil shale formation having a composition at least substantially equivalent to those portions of oil shale formations encountered in the Piceance Creek Basin of Colorado which contain networks of relatively permeable interconnected water-filled and water-productive flow channels formed by natural fracturing or leaching of the formation;

providing a generally vertical heated channel extending through said formation between an injection location underlying a production location by injecting steam into the lower location while producing fluid from the higher location and adjusting the composition, pressure, flow rate and volume of the injected and produced fluid to enhance water removal, drying and preheating of the oil shale so that a substantially steam-filled zone is extended from each injection location to at least near each production location;

injecting a gaseous fluid which contains effectively noncondensible gaseous components and is heated to an oil shale pyrolyzing temperature into the lower portion of the heated channel so that oil shale is pyrolyzed by hot fluid flowing upward through the channel; and

producing shale oil from an upper portion of the heated channel while adjusting the composition, pressure and flow rate of the injected and produced fluid to restrict the production of water by counterbalancing the reservoir pressure and to maintain a ratio of oil-phase to water-phase components of at least about 0.10 within the produced field.

4,148,360

METHOD FOR ACIDIZING HIGH TEMPERATURE SUBTERRANEAN FORMATIONS

David J. Watanabe, Orange, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Mar. 10, 1978, Ser. No. 885,450
Int. Cl.[2] E21B *43/26, 43/27*
U.S. Cl. 166—300 **28 Claims**

1. A method for acidizing a subterranean formation having a temperature between about 250° F. and about 700° F., which comprises:

introducing a substantially anhydrous treating fluid into a well communicating with said formation, said treating fluid consisting essentially of a normally liquid acid precursor having a generalized formula:

$$C_xH_yX_z$$

wherein

$x=1$ or 2;

$y=0$, 1 or 2, but $y \leqq x$; and

$z=2x-y+2$,

and which is thermally stable under the temperature and pressure conditions in said well, or mixtures thereof; and

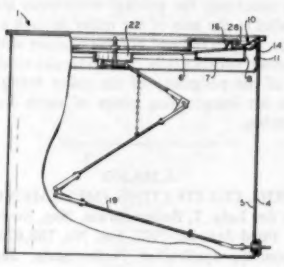
displacing said treating fluid from said well and into said formation, wherein said acid precursor hydrolyzes in situ to generate a hydrohalic acid which reacts with said formation to increase the permeability thereof.

4,148,361

FOAM DELIVERY SYSTEM FOR A FLOATING ROOF TANK

Harold V. Christensen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 20, 1977, Ser. No. 799,031
Int. Cl.[2] A62C *37/06*
U.S. Cl. 169—66 **7 Claims**



1. An apparatus for delivering foam to a floating roof of a tank, said apparatus including:

a tank;

a floatable roof movably received in said tank, said roof having an upwardly facing surface and a sliding seal forming a seal between a peripheral portion of the roof and a portion of the tank;

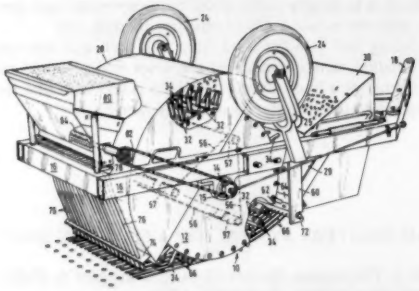
first conduit means having a first end and a second end with said first end being positioned adjacent a lower disposed portion of said tank, and said second end being open and opening onto said upwardly facing surface;

a first valve means cnnected in said first conduit means between said first end and said second end, said first valve means being operable for preventing flow from the first end to the second end and allowing flow from the second end to the first end;

second conduit means connected to and opening into said first conduit means between said first end and said first valve means for continuous flow communication with said first conduit means whereby said first conduit means is always in flow communication with said second conduit means, said second conduit means having at least one portion operable for dispensing foam from the first conduit means onto a portion of the roof; and

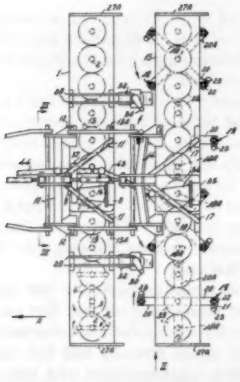
first means cooperating with said first conduit means adjacent the first end adapted for allowing flow of fire extinguishing fluid into the first conduit means for flow to the second conduit means.

4,148,362
PENETRATING MACHINE
Günther Orth, Birken, Fed. Rep. of Germany, assignor to Wolf-Gerate GmbH, Fed. Rep. of Germany
Filed Nov. 7, 1977, Ser. No. 849,473
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1976, 2650772; Aug. 1, 1977, 2734676
Int. Cl.[2] A01B 45/02
U.S. Cl. 172—22 18 Claims



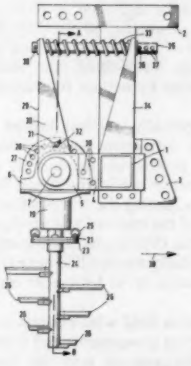
1. A perforating machine for forming rows of holes in the ground comprising: a perforating roller which is adapted to roll on the ground and whose peripheral surface carries perforating tubes mounting for pivotal movement about axes extending parallel to the axis of the roller in such a manner that from the beginning to the end of their contact with the ground their axes remain substantially perpendicular to the ground, at least a part of the periphery of the roller being enclosed by guide means for intercepting plugs of earth formed by the perforating tubes.

4,148,363
SOIL CULTIVATING IMPLEMENTS
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland
Filed Jan. 12, 1977, Ser. No. 758,676
Claims priority, application Netherlands, Jan. 15, 1976, 7600363
Int. Cl.[2] A01B 33/06
U.S. Cl. 172—47 11 Claims



1. A soil cultivating implement assembly comprising two elongated frame portions linked to one another with a linkage and said portions each extending transverse to the direction of travel, a leading frame portion supporting a front row of rotatable soil working members that are driven to rotate about corresponding upwardly extanding shafts, a trailing frame portion mounting a rear row of soil working tools journalled in said trailing frame portion to rotate about respective upwardly extending axes, driving means connected to positively rotate said working members and said tools, the distance between the axes of rotation of neighboring tools being substantially equal but different from the distances between neighboring shafts of said soil working members, said row of working members and row of tools being positioned one behind the other to successively work the ground, coupling means on said assembly being connectable to a prime mover and ground supporting wheels being interconnected to said assembly, the axes of rotation of said ground wheels coinciding with one another and said wheels being positioned adjacent the lateral outer sides of said linkage, between the two frame portions, at least one of said tools comprising an elongated substantially horizontal tine carrier that is angularly displaceable about its own longitudinal axis against resilient opposition, said carrier extending with its longitudinal axis substantially perpendicular to the axis of rotation of the corresponding tool, said carrier being retained in a connector housing and elastically resilient material being positioned between the housing and said carrier.

4,148,364
CULTIVATING MACHINE
Franz Gross-Scharmann, Oldenburg, Fed. Rep. of Germany, assignor to Amazonen-Werke H. Dreyer, Hasbergen-Gaste, Fed. Rep. of Germany
Filed Aug. 25, 1977, Ser. No. 827,903
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1976, 2639272
Int. Cl.[2] A01B 33/06
U.S. Cl. 172—58 8 Claims



1. In a cultivating machine having a frame with a transverse shaft on which angle drives with rotatable tool holders are individually pivotally mounted, the tool holders being driven by the transverse shaft through the angle drives and the angle drives having arms, resilient means interconnecting the arms and the frame for resilient holding the angle drives and the tool holders in the working position, the improvement which comprises each angle drive having an output shaft directly driven by the transverse shaft, and the tool holder of each angle drive being mounted on the output shaft for rotation therewith and means for adjusting the angles between the arms and the axes of the tool holders.

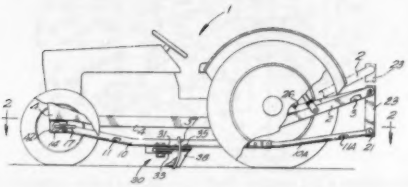
4,148,365
EARTH WORKING ATTACHMENT FOR TRACTORS
Ernest L. Anderson, 85115 Florence Rd., Eugene, Oreg. 97405
Filed Sep. 14, 1977, Ser. No. 833,018
Int. Cl.[2] E02F 3/76; A01B 59/044
U.S. Cl. 172—781 10 Claims

1. An earthworking attachment for disposition below a tractor frame, the tractor being of the type having vertically

adjustable arms at its rearward end, said tractor further being of the type having a pair of wheels adjacent its forward end and another pair of wheels adjacent its rearward end, said attachment comprising,

an assembly including an earthworking instrumentality for ground contact and adapted to be located between the tractor front and rear pairs of wheels,

elongate assembly support means adapted for lengthwise disposition below and along the length of the tractor frame, said support means comprising elongate tubular members adapted for independent vertical positioning by the adjustable tractor arms, bracket means securable to the



tractor frame at the forward end thereof for coupling the forward end of said suport means to the tractor frame in a manner permitting vertical adjustment of said support means

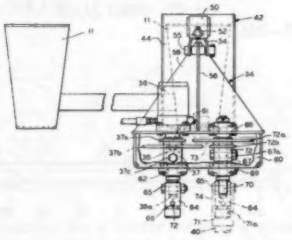
means for coupling the rearward end of said support means to the adjustable arms of the tractor whereby up and down positioning of the assembly may be accomplished by said adjustable arms, said coupling means interconnecting the rearward ends of said tubular members in a manner permitting the height of one of said tubular members to be varied by an adjustable tractor arm relative to the height of the remaining tubular member to impart inclination to the instrumentality transversely of the tractor centerline.

4,148,366

VARIABLE SPEED AUGER FOR USE WITH A SKID STEER VEHICLE

Harold K. Beckstrom, and James J. Bauer, both of Lisbon, N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 28, 1977, Ser. No. 791,917
Int. Cl.[2] E21C *1/14*
U.S. Cl. 173—28 **4 Claims**



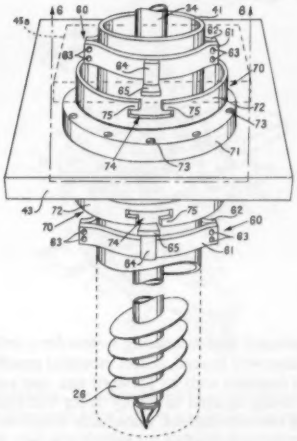
1. An earth boring implement for a vehicle comprising an implement frame, drive means for the implement suitably mounted on the implement frame, a main drive shaft operatively connected to the drive means of the implement, an earth boring tool operatively connected to the drive shaft of the implement, and means for varying the speed of the earth boring tool to compensate for variations in soil conditions, said means comprising an auxiliary shaft operatively connected to the drive shaft of the implement and power transfer means operatively connected between the drive shaft of the implement and the auxiliary shaft to drive the auxiliary shaft at a speed differing from the speed of the drive shaft, the power transfer means including a multiple sprocket arrangement which includes a first set of sprockets comprising a relatively small sprocket mounted on the main drive shaft, aligned with a relatively large sprocket provided on the auxiliary shaft, and a second set of sprockets comprising a relatively large sprocket provided on the main drive shaft aligned with a relatively small sprocket on the auxiliary shaft, and an endless chain interchangeable between the two sprocket sets whereby mounting of the chain on the first set of sprockets transfers the output of the main drive shaft driven by the drive means of the implement to the auxiliary shaft to provide a relatively low speed output for the auxiliary shaft of the implement and mounting the chain on the second set of sprockets provides a relatively high speed output for the auxiliary shaft of the implement.

4,148,367

WELL DRILLING APPARATUS

Wendell L. Reich, P.O. Box 7391, Reno, Nev. 89502

Filed Mar. 14, 1977, Ser. No. 777,163
Int. Cl.[2] E21B *3/04*
U.S. Cl. 175—171 **3 Claims**



1. Apparatus for drilling a well comprising: (1) a frame; (2) a drill carried in a slideable relation to said frame; (3) means to turn said drill carried in slideable relation to the frame in such manner as to power said drill; (4) means to carry a drill casing about the said drill mounted in slideable relationship on said frame; (5) means cooperatively attached to said casing to cause the same to turn, including a motor slideably carried by said frame and clamp means clamping upon said casing, said clamp means including a lip which interlocks with slots in engaging means driven by said motor.

4,148,368

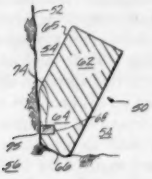
ROCK BIT WITH WEAR RESISTANT INSERTS

Robert F. Evans, La Habra, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Continuation-in-part of Ser. No. 726,826, Sep. 27, 1976, abandoned. This application Jun. 13, 1977, Ser. No. 805,659
Int. Cl.[2] E21B *9/36*
U.S. Cl. 175—329 **8 Claims**

1. A rock drill bit having a rolling cone cutter with generally circular rows of tungsten carbide inserts mounted therein, the tungsten carbide inserts mounted in the roller cone cutter including a row of tungsten carbide inserts on the gage cutting

row on the rock bit, the improvement wherein at least a portion of the tungsten carbide inserts in the gage cutting row



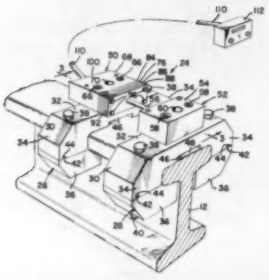
have a diamond insert embedded in a work surface of such a tungsten carbide insert.

4,148,369

VEHICLE WEIGHING SYSTEM TRANSDUCER

Alfred R. Mercer, Jr., Bellevue, Wash., assignor to Structure Instrumentation, Inc., Tukwila, Wash.

Filed Sep. 16, 1977, Ser. No. 833,980
Int. Cl.[2] G01G *19/12*
U.S. Cl. 177—136 **4 Claims**



1. In an on-board load measuring system for a vehicle having a pair of transversely spaced, center mounted equalizing beams supported at opposite ends by forward and rear axles, each of said beams being tapered inwardly from the center of said beam toward the ends thereof, transducer means for measuring load induced deflection of said equalizing beams comprising:

first and second mounting pads including means for clamping said mounting pads to said equalizing beam at spaced apart points thereof, said clamping means straddling said beam with the inner surfaces of the straddling portion tapered to match the taper of said equalizing beam such that the position of said positioning measure means along the length of said equalizing beam is fixed when the inner surfaces of the straddling portions abut the outer lateral surface of said equalizing beam; and

position measuring means carried by said pads for measuring the displacement of said pads toward and away from each other responsive to deflection of said equalizing beam.

4,148,370

TOP LOADING PRECISION BALANCE

Paul Luchinger, Greifensee, and Ernst Strickler, Wolfhausen, both of Switzerland, assignors to Mettler Instrumente AG, Zurich, Switzerland

Filed Nov. 8, 1977, Ser. No. 849,667
Claims priority, application Switzerland, Dec. 14, 1976, 15691/76
Int. Cl.[2] G01G *3/14, 7/00, 21/28*
U.S. Cl. 177—210 EM **7 Claims**

1. A precision balance comprising:

(a) a frame of non-magnetic material defining a cavity therein,

(1) at least one part of said frame differing from the remainder of said frame by reduced cross section and thereby enhanced flexibility transverse to a predetermined plane,

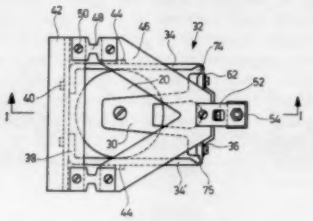
(2) said remainder of said frame including means for enhancing the rigidity of said frame in said plane;

(b) a magnet system mounted on said frame in said cavity and bounding an air gap;

(c) a parallelogram suspension assembly,

(1) said assembly including a plurality of elements hingedly connected for movement in said plane,

(2) a portion of said frame constituting one of said elements,



(3) another element of said assembly including means for supporting a weighing pan for translatory movement of said pan in said plane while substantially preventing angular movement of said pan in said plane;

(d) a motion transmitting member pivotally mounted on said frame;

(e) connecting means operatively connecting said motion transmitting member to said other element for joint movement with said weighing pan; and

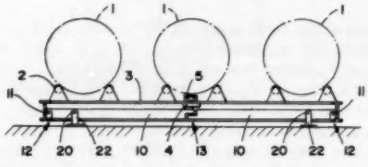
(f) a coil of electrically conductive material mounted on said motion transmitting member for movement in said air gap during said joint movement.

4,148,371

LOAD CELL SCALE

David P. Nelson, 3256 Judith La., Lafayette, Calif. 94549

Filed Feb. 2, 1978, Ser. No. 874,913
Int. Cl.[2] G01G *21/08*
U.S. Cl. 177—256 **4 Claims**



1. An improved load cell scale comprising

a movable frame carrying a load;

a load cell mounted on the frame;

a pair of levers each pivotally mounted to the frame near a first end of the lever and bearing upon the load cell at a second opposite end of the lever;

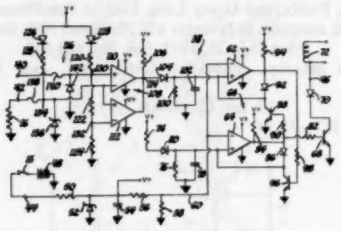
at least a pair of pivotable fulcrum pins mounted on a supporting base and each carrying one of the levers at a fulcrum, each lever at the fulcrum being journaled upon its mating fulcrum pin in a bore slightly greater in diameter than the diameter of the fulcrum pin so the pin can roll in said bore as the lever pivots under load.

4,148,372

RESISTOR CODED THEFT DETERRENT SYSTEM

Thaddeus Schroeder, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 21, 1977, Ser. No. 835,220
Int. Cl.[2] B60R *25/04*
U.S. Cl. 180—114 **4 Claims**



1. A resistor value coded anti-theft system for a motor vehicle comprising in combination,

a key actuable ignition lock means adapted to receive a key and including contact elements effective to engage and define a circuit path including a resistance integral with said key,

means defining a circuit responsive to the value of the resistance between said contact elements and effective to enable engine start when such resistance is of a predetermined value in relation to an internal resistance of selectable value in said circuit means,

said circuit means further initially having a fusible element which enables engine start independent of the value of said resistance so as to permit engine start at will during assembly operations,

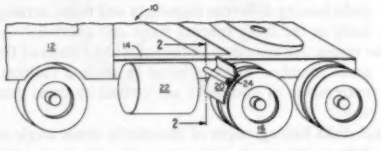
whereby at an appropriate stage of vehicle assembly said fusible element may be destroyed and thereby permit said circuit means to discriminate between different values of said resistance between said contact elements.

4,148,373

FENDER SUPPORT

Erving H. Cline, 379 Walnut St., Stoughton, Mass. 02072

Filed Jun. 30, 1977, Ser. No. 811,622
Int. Cl.[2] B62D *25/16*
U.S. Cl. 280—154.5 R **2 Claims**



1. In combination, for a tractor vehicle, a quarter fender, means for mounting the quarter fender and a frame section of the vehicle, said means for mounting supporting the fender from the frame section adjacent a rear wheel of the tractor, the combination comprising;

a hollow elongated support tube,

means fixedly securing the fender to a section of the support tube,

a washer having an outer size dimensioned to tightly fit within and at one end of the support tube and having a central aperture,

weld means for securing the washer in the support tube at said one end,

said frame section having a vertical wall for receiving the said one end of the support tube and including a hole therein adapted to be aligned with the central aperture of the washer,

and bolt and cooperating nut, said bolt extending through the tube, the aperture of the washer and the hole in the frame,

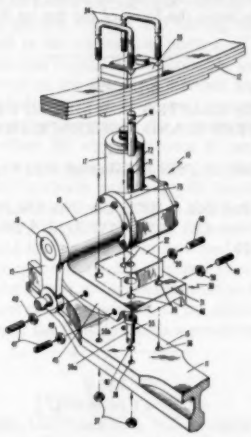
whereby when said bolt and nut are interengaged both the vertical wall of the frame section and the washer are sandwiched between the head of the bolt and the nut.

4,148,374

UNIVERSAL LOCATING PIN FOR AXLE MOUNTED POWER STEERING

Richard H. Sheppard, Hanover, Pa. 17331

Filed Sep. 14, 1977, Ser. No. 833,180
Int. Cl.[2] B62D *5/06*
U.S. Cl. 180—163 **7 Claims**



1. In combination, an adjustable pin assembly and a slightly oversized and smooth bore hole in a vehicle axle receiving said pin assembly axle for locating a bracket for a power steering gear unit on the axle comprising

a pin having a central opening and adapted to pass through said bracket;

means for accurately positioning said pin with respect to said bracket; and

adjustable expanding means extending substantially radially outward from said central opening to engage said oversized hole at any position therealong; whereby said bracket may be located and centrally fixed with respect to a lateral position on said axle without having a precision reamed hole in said axle.

4,148,375

SEISMIC VIBRATION SOURCE

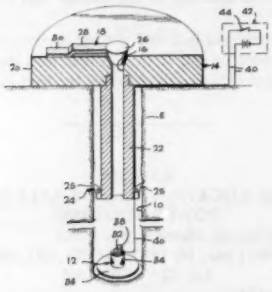
Warren L. Dowler, Sierra Madre; Giulio Varsi, Pasadena, and Lien C. Yang, La Canada, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 22, 1977, Ser. No. 826,326
Int. Cl.[2] G01V *1/04*
U.S. Cl. 181—117 **9 Claims**

1. A method for creating vibrations in the earth, comprising:

forming a hole in the ground;

generating large quantities of gas in said hole and allowing the gas to press directly against the walls of the hole; and



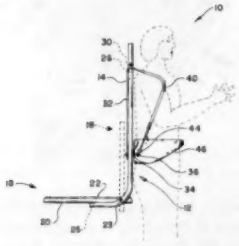
rapidly closing and opening the upper end of said hole, to thereby decrease the force of the gas on the hole walls in pulses.

4,148,376

APPARATUS ADAPTED FOR MULTIPURPOSE USE SUCH AS A TREE STAND, BACKPACK FRAME OR THE LIKE

Carl C. Campbell, Jr., 909 McKimmon Rd., Fayetteville, N.C. 28303

Filed Dec. 1, 1977, Ser. No. 856,219
Int. Cl.[2] A45F *4/02, 3/10, 3/26*
U.S. Cl. 182—20 **9 Claims**



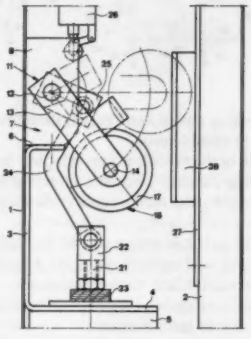
1. An apparatus adapted for multipurpose use such as a tree stand, backpack frame or the like comprising: a main frame structure including two laterally spaced side members and at least one cross member interconnected between said side members to form a generally rigid frame structure, said main frame structure forming an upper back area and a lower seat support area with said seat support area extending angularly from said back area and wherein respective ends of said laterally spaced side members are curved to form said seat support area such that the curved ends of said laterally spaced side members extend outwardly generally perpendicular to the part of said side members forming said back area; back support means secured about said back area of said main frame structure and extending between said laterally spaced side members to form a backrest; a seat secured about said seat support area of said main frame structure with said seat being pivotably mounted about a transverse axis extending between the curved portions of said laterally spaced side members of said main frame structure and movable from a horizontal support position generally perpendicular to the back area of said main frame structure to a vertical position wherein said seat lies and extends in a generally parallel relationship with the back area of said main frame structure; seat support means associated with said seat support area of said main frame structure for supporting said seat in said horizontal position by limiting the pivotable movement of said seat about said transverse axis; and strap means operatively connected to the back area of said main frame structure for enabling the entire apparatus to be strapped or tied to a structure such as a tree or the like whereby said apparatus may be suspended and supported from that structure.

4,148,377

APPARATUS FOR ACTUATING HOISTWAY DOORS OF AN ELEVATOR

Heinz D. Foelix, and Georg Lang, both of Schaffhausen, Switzerland, assignors to Inventio AG, Hergiswil NW, Switzerland

Filed Dec. 23, 1977, Ser. No. 864,090
Claims priority, application Switzerland, Jan. 10, 1977, 239/77
Int. Cl.[2] B66B *13/12*
U.S. Cl. 187—52 LC **7 Claims**



1. An apparatus for actuating the hoistway doors of an elevator system having an elevator cabin door, comprising:
- a fixed coupling element arranged on one of the doors;
- said coupling element comprising a comb having acute-angle teeth;
- a movable electromagnetically actuatable coupling element arranged on the other of said doors;
- a pivotable fork member;
- means for pivotably mounting said fork member;
- said movable electromagnetically actuatable coupling element comprising an entrainment member;
- said movable electromagnetically actuatable coupling element being engageable with the coupling element at the region of an elevator landing;
- said entrainment member comprising a number of disks rotatably mounted on said pivotable fork member, said disks having different diameters and being arranged essentially at the same spacing from one another;
- the respective diameter of the individual disks of the entrainment member being altered in such a fashion that the extremities of said disks are limited by cone generatrixes; and
- said disks having edges of essentially acute angle configuration.

4,148,378

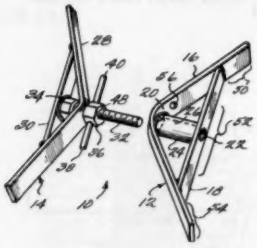
TANDEM WHEEL PARK BRAKE LOCK

Thomas G. Alford, 603 Florence Ave., Vicksburg, Miss. 39180

Filed Nov. 18, 1977, Ser. No. 852,731
Int. Cl.[2] F16D *63/00*
U.S. Cl. 188—74 **16 Claims**

3. A braking device for a vehicle having spaced apart tandem wheels including a support shaft having a length less than the minimum spacing between the tandem wheels, a pair of brake shoe assemblies mounted on said support shaft and adjusting means provided on said shaft between said pair of brake shoe assemblies for moving the brake shoe assemblies away from one another along a path defined by said support shaft, each of said brake shoe assemblies including first and second

brake shoe elements, said first brake shoe element comprising a V-shaped member mounted on said support shaft at the apex thereof, said second brake shoe element comprising a member attached within the opening side of said V-shaped member so that when the braking device is positioned between the mini-



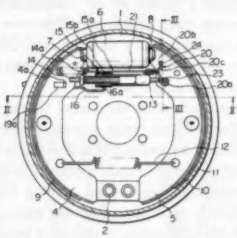
mum spacing of the tandem wheels and the adjusting means is operated to move the brake shoe assemblies apart, each of the brake shoe assemblies is thereby brought into engagement with one of the tandem wheels and both said first and second brake shoe elements contact the surface of each respective wheel.

4,148,379

BRAKE SHOE CLEARANCE ADJUSTING DEVICE

Masami Aono, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Feb. 27, 1978, Ser. No. 881,894
Claims priority, application Japan, Feb. 28, 1977, 52-21029
Int. Cl.² F16D *51/22, 65/40*
U.S. Cl. 188—79.5 P **3 Claims**



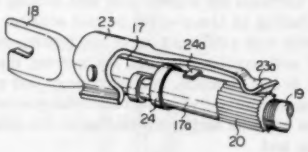
1. A brake shoe clearance adjusting device in an internal shoe drum brake including a strut consisting of a first strut part, a second strut part having male screw-thread portion at least a part of which being received slidably in a tubular portion of the first strut part, and an adjusting nut engaging with the male screw-thread portion of the second strut part and engaging with first strut part, said strut being disposed to extend between a pair of arcuate brake shoes, said adjusting nut being rotated when brake shoe clearance exceeds a predetermined value so as to extend the second strut part from the first strut part, wherein there is disposed a retaining member with one end thereof engaging with one of the brake shoes and the other end thereof engaging with one end of the strut, and a return spring extends between the other brake shoe and the central portion of the retaining member.

4,148,380

AUTOMATIC SHOE CLEARANCE ADJUSTING DEVICE IN SHOE DRUM BRAKE

Tetsuo Haraikawa, Funabashi, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Dec. 14, 1977, Ser. No. 860,321
Claims priority, application Japan, Dec. 20, 1976, 51-153053
Int. Cl.² F16D *65/56*
U.S. Cl. 188—79.5 B **1 Claim**



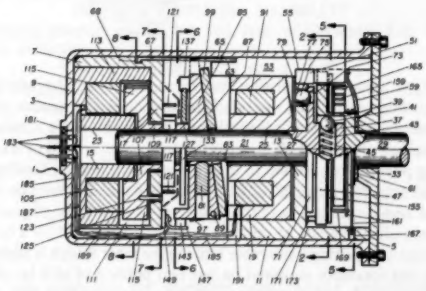
1. An automatic shoe clearance adjusting device for a shoe drum brake, comprising: a first strut member having a cylindrical portion on one end, a second strut member having a male screw threaded portion thereon and having one end portion thereof received in the cylindrical portion of the first strut member in telescopic engagement therewith, an adjusting nut rotatably mounted on the first strut member and threaded on the screw threaded portion of the second strut member, means for rotating the adjusting nut on the second strut member in one direction when the shoe clearance exceeds a predetermined value, a rotation resisting member mounted on the first strut member and normally engaging with the adjusting nut to prevent rotation of the adjusting nut in the opposite direction, and a coil-shaped bimetallic member coiled around the first strut member and having one end connected to the first strut member and the other end being disposed adjacent said rotation resisting member for acting on the rotation resisting member to move it out of engagement with the adjusting nut when the temperature of the brake exceeds a predetermined level.

4,148,381

CODED ACTUATOR

Roy A. Zangrando, Lake Hiawatha, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 3, 1977, Ser. No. 756,518
Int. Cl.² F16D *23/00*
U.S. Cl. 192—2 **15 Claims**



1. A coded actuator comprising:

a housing;

an output shaft mounted in one end of said housing for rotation, through at least a fraction of one complete turn, about a given axis; said shaft including a concentric disc-like radial flange having a predetermined number of locking notches equally spaced around its periphery;

a like number of locking members each mounted in said

housing for movement between two positions, one in and one out of locking engagment with one of said locking notches, in accordance with a desired code;

an actuator shaft mounted in said housing for rotation about said axis, one end of said actuator shaft being adjacent to and detachably connected to said output shaft for rotating the latter when it is unlocked;

means for resiliently detenting said actuator shaft in each of a like number of angular positions in each of which said locking members are aligned with said locking notches;

means, including an arm pivoted on said actuator shaft and engageable with a different one of said locking members in each of said angular positions, for moving that locking member in one direction, into said one of said positions;

resilient means constantly biasing said locking member in the direction opposite said one direction to the other of said positions; and

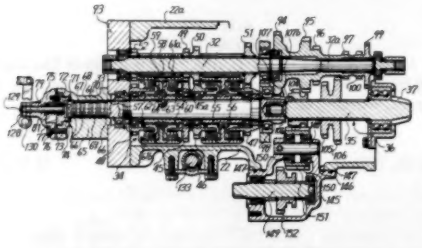
means for rotating said actuator shaft step-wise, in one direction, from one angular position to the next.

4,148,382

VEHICLE POWER TRANSMISSION WITH BRAKE

Kojiro Yamaoka, Nishinomiya; Toshiro Azuma, Mino, and Koichiro Fujisaki, Nishinomiya, all of Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan

Filed Dec. 27, 1976, Ser. No. 754,551
Claims priority, application Japan, Oct. 1, 1976, 51-118729
Int. Cl.[2] B60K *29/02*
U.S. Cl. 192—4 A **5 Claims**



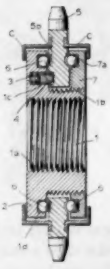
1. A power transmission for tractors and the like which is provided with a fluid operated speed-change mechanism comprising a plurality of speed-change gears which are rotatably mounted on a lay shaft arranged in transmission path of travelling power from engine to final drive means and a plurality of fluid actuated clutches each of which is associated with each of said speed-change gears for selectively connecting respective speed-change gears to said lay shaft, characterized by a brake means comprising a movable braking member which is slidably but not rotatably mounted on one end portion of said lay shaft so that the braking member is faced to an engaging face of a fixed frame located around said one end portion of the lay shaft, said braking member being biased by a spring means so as to be engaged to said engaging face, and a fluid actuator comprising a piston via which said movable braking member is biased toward said engaging face by said spring means, fluid pressure for actuating said fluid actuated clutches being applied to a fluid chamber before said piston so that said movable braking member is disengaged from said engaging face in the operation state of the fluid operated speed-change mechanism.

4,148,383

FREEWHEEL

Takazi Nakano, 1122 Banchi, Hiokiso Nishimachi Sakai, Japan

Filed Sep. 26, 1977, Ser. No. 836,908
Claims priority, application Japan, Nov. 29, 1976, 51-159903[U]
Int. Cl.[2] F16D *41/18*
U.S. Cl. 192—64 **8 Claims**



1. A freewheel assembly comprising:

a body member having axially extending internal threads for attachment to a hub, said body member including a first axial portion having a threaded external peripheral surface and a second axial portion having an integral radially outwardly extending flange, said flange having a radially extending axially inner surface;

a plurality of axially extending holes bored in said flange and opening on said inner surface;

each said hole having positioned therein an engagement device and means for urging said engagement device outwardly of said hole;

a sprocket wheel mounted about said threaded external peripheral surface of said body member, said sprocket wheel having first and second radially extending lateral surfaces, said first lateral surface facing said inner surface of said flange;

said first lateral surface of said sprocket wheel having formed therein a plurality of circumferentially spaced locking grooves, each said locking groove having a depth tapering circumferentially from a first deep end thereof toward a second end thereof merging into said first lateral surface of said sprocket wheel;

a tightening ring screwed onto said threaded external peripheral surface of said body member, said tightening ring having a radially extending inner surface facing said second lateral surface of said sprocket wheel, said inner surface of said tightening ring having formed therein a circumferentially extending annular groove;

a plurality of balls positioned within said annular groove and contacting said second lateral surface of said sprocket wheel; and

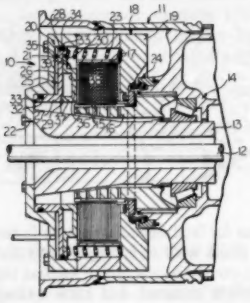
said tightening ring forcing said balls toward said sprocket wheel and forcing said sprocket wheel toward said flange and against said engagement devices and the force of said urging means, such that when one of said sprocket wheel and said body member is rotated in a first direction, said engagement devices will be locked against said first ends of said locking grooves and said sprocket wheel and said body member will rotate together in said first direction, and such that when one of said sprocket wheel and said body member is rotated in a second direction, said engagement devices will ride over said second ends of said locking grooves and will not lock in said locking grooves and the other of sid sprocket wheel and said body member will not be rotated.

4,148,384

HOLLOW PISTON ASSEMBLY FOR BRAKES OR CLUTCHES

Robert A. Stinson, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 9, 1977, Ser. No. 777,255
Int. Cl.[2] F16D *19/00, 25/00*
U.S. Cl. 192—85 AA 13 Claims



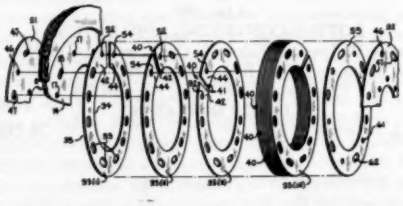
1. A hollow piston assembly reciprocally mounted in a housing and a plurality of interleaved friction discs are mounted in said housing, said piston assembly engaging one side of said friction discs to selectively compress the same and comprising an annular first member, an annular second member mounted on said first member in back-to-back relationship therewith, and means defining an annular chamber between said first and second members.

4,148,385

COUPLING DEVICE WITH SPRING DAMPER

William H. Sink, Auburn, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 4, 1977, Ser. No. 821,669
Int. Cl.[2] F16D *3/14*
U.S. Cl. 192—106.1 13 Claims



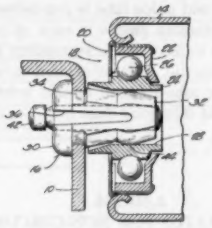
1. A coupling device comprising a rotatable driving member, a rotatable driven member, and a plurality of stacked and generally C-shaped springs connecting said driving member and said driven member, each of said springs having two end portions, said two end portions lying in a plane generally perpendicular to the axis of rotation of at least one of said rotatable driving member and said rotatable driven member, said planes of each of said springs being spaced along said axis, one of said end portions of each spring operatively connected to said driving member and the other of said end portions of each spring operatively connected to said driven member, wherein said end portions of said springs are staggered about the circumference of at least one of said driving and driven members.

4,148,386

CONVEYOR ROLLER MOUNTING DEVICE WITH CURVED SURFACES

Bernard G. Bradbury, Chico, Calif., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Feb. 17, 1978, Ser. No. 878,633
Int. Cl.[2] B65G *13/00, 39/00*
U.S. Cl. 193—37 4 Claims



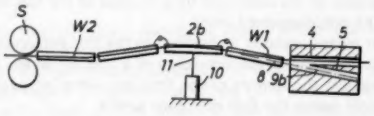
1. In combination with a roller conveyor having a multiplicity of rollers defining a load bearing surface and being positioned between and rotatably secured to support frames, each roller having a bearing assembly at the ends thereof which define an axle bore having a polygonal cross-section therethrough, a support axle extending through the bore into openings in the adjacent support frames, an improved axle comprising a stub having a predominantly polygonal cross-section for supporting the rollers at each end, said stub portion having a head portion with a diameter larger than the diameter of the frame openings and an elongated body adapted for insertion through the frame openings and into the bore, said body having a plurality of curved surfaces integral with and extending from said elongated body, at least some of said curved surfaces contacting and providing support to the bearing assembly in a plane approximately perpendicular to the bore axis, said curved surfaces supporting the bearing assembly further being positioned at a predetermined location along the bore so as to minimize coupling between the upward force exerted by the axle and the downward force of the bearing assembly.

4,148,387

SWITCH FOR WIRE AND REFINED IRON MILLS

Rolf Michel, Drensteinfurt, and Jörn Moslener, Dusseldorf, both of Fed. Rep. of Germany, assignors to DEMAG Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Jun. 9, 1977, Ser. No. 805,117
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626476
Int. Cl.[2] B65G *11/20;* B21B *41/00*
U.S. Cl. 193—39 3 Claims



1. An apparatus for directing continuously successively formed several strands to two or more exit paths, comprising

(a) a plurality of connected together articulated tubes defining an arrival guide for continuously directing said severed strands to said paths;

(b) the last of said tubes adjacent said exit paths being a guide tube and movable from one of said exit paths to another exit path;

(c) the entry end of said guide tube being positioned adjacent the exit end of the preceding tubes forming said arrival guide for receiving said severed strands;

(d) a plurality of continuing guides defining said exit paths; the improvement characterized by

(e) the axes of said continuing guides diverging from a point internally of said guide tube, said point being spaced from the outlet end of said guide tube;

(f) said outlet end of said guide tube being spaced from the entry end of said plurality of continuing guides; and

(g) means for pivoting said guide tube around said point so that the axis of said guide tube is coaxial with the axis of one of said continuing guides in each of its positions of movement prior to feeding of a succeeding strand thereto;

(h) whereby succeeding strands are fed in a straight line from said guide tube to each of said continuing guides along one of said diverging axes.

4,148,388

TESTING APPARATUS FOR NON-CIRCULAR COINS

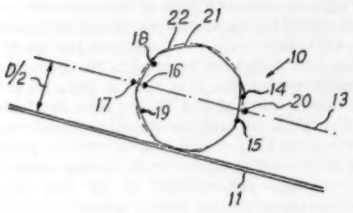
Peter J. Reyner, Northwood, and Patrick A. Henehan, Bracknell, both of England, assignors to Mars, Inc., McLean, Va.

Filed Oct. 22, 1976, Ser. No. 734,723

Claims priority, application United Kingdom, Jan. 9, 1976, 875/76

Int. Cl.[2] G07F 3/02

U.S. Cl. 194—102 **9 Claims**



1. An apparatus for testing non-circular multi-sided coins of a particular denomination comprising:

a coin passageway;

a coin track defining a coin path along the coin passageway;

a test position on the coin track;

means for examining a coin at the test position comprising an array of coin sensors and including:

a first reference sensor and at least one secondary sensor spaced along a first line predetermined relative to the test station;

a second reference sensor and at least one secondary sensor spaced along a second line predetermined relative to the test position, one sensor of one line being spaced circumferentially relative to a coin at the test position from one sensor of the other line by a fraction of the side length of the predetermined coin;

first means initiated responsive to the first reference sensor for comparing the dimension of a coin at the test position against the sensors of the first line when an edge of the coin passes the first reference sensor;

second means initiated responsive to the second reference sensor for comparing the dimension of the coin at the test position against the sensors of the second line when an edge of the coin passes the second reference sensor and at substantially the same time as the comparision by the first means for comparing, the examining means issuing an acceptance signal if either one of the comparing means determines the dimension of the coin along the corresponding line to be equal to the dimension of a genuine coin to within a predetermined tolerance, the tolerance for each comparing means taken alone being such as to reject a substantial proportion of genuine coins.

4,148,389

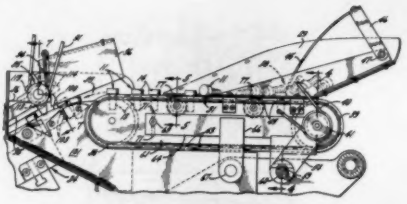
APPARATUS FOR FEEDING AND ORIENTING SCREWS

Paul H. Dixon, Belvidere, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill.

Filed Apr. 20, 1977, Ser. No. 789,150

Int. Cl.[2] B65G 47/24

U.S. Cl. 198—389 **6 Claims**



1. Apparatus for feeding and orienting fasteners each having an elongated shank with an enlarged head on one end thereof, said apparatus comprising a pair of endless belts each made of resiliently flexible material and each having an active run extending in a generally horizontal direction, substantially smooth rollers supporting and guiding said belts with each belt curving vertically around a roller at each end of the active run of the belt, said belts being disposed in side-by-side relation and being spaced horizontally from one another by a distance greater than the diameter of the fastener shanks and less than the diameter of the fastener heads whereby a fastener deposited onto the active runs of said belts may assume an oriented position in which the fastener hangs by its head from said active runs with the shank of the fastener located between the belts, means for depositing randomly oriented fasteners onto the active runs of said belts at a supply station, means for driving the active runs of said belts in a direction to advance said fasteners from said supply station to a discharge station, and means coacting between said rollers and said active runs for vibrating said active runs in a substantially vertical direction thereby to shake said randomly oriented fasteners into said oriented positions as said fasteners are advanced to said discharge station, said last-mentioned means comprising lugs spaced along and formed integrally with said belts, said lugs being operable to engage said rollers and flex the active runs of said belts vertically as said lugs pass around said rollers.

4,148,390

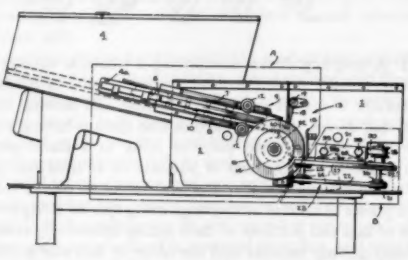
BOTTLE-CONVEYING APPARATUS

Alexandru D. Ionescu, Fairfield, Conn., assignor to New England Machinery, Inc., Bridgeport, Conn.

Filed Jul. 27, 1977, Ser. No. 819,601

Int. Cl.[2] B65G 47/24

U.S. Cl. 198—400 **24 Claims**



1. Bottle conveying apparatus comprising rotationally mobile bottle-gripping means for frictionally gripping the opposite sides of each of a plurality of bottles advancing thereto in

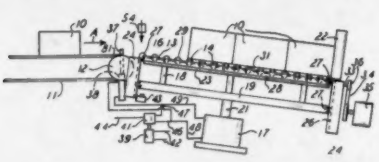
succession and rotatably advancing such bottles in a downstream direction, linearly mobile bottle-gripping means downstream of said rotationally mobile bottle-gripping means for frictionally gripping the opposite sides of bottles advanced thereto in succession by said rotationally mobile bottle-gripping means and substantially linearly advancing such bottles away from said rotationally mobile bottle-gripping means; bottle ejection means interposed between said rotationally mobile bottle-gripping means and said linearly mobile bottle-gripping means for successively ejecting bottles from said rotationally mobile bottle-gripping means; and, means for directing said ejected bottles toward said linearly mobile bottle-gripping means.

4,148,391

ACCUMULATOR AND CONVEYOR FOR A ROW OF ITEMS

Walter J. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Filed Oct. 17, 1977, Ser. No. 842,546
Int. Cl.² B65G 47/26
U.S. Cl. 198—431 **7 Claims**



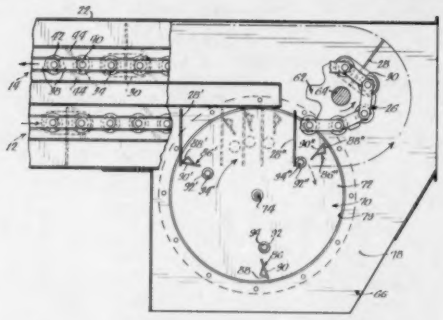
1. An accumulator and conveyor for a row of items, comprising a first conveyor for supporting and conveying items along a path of conveyance and having a terminal portion defining a terminal location of positioning the items, a second conveyor disposed in end-to-end item-movement communication with said terminal portion of said first conveyor for receiving the items from said first conveyor and for accumulating a row of several of the items, a stop movably disposed at said terminal end of said first conveyor for interrupting the movement of the items onto said second conveyor, said second conveyor including two sections of item-supporting members and with said two sections being disposed in said path of conveyance of said first conveyor, a first one of said sections being at an elevation higher than the other of said sections and presenting a first item-receiving conveyor section, said two sections including item-supporting members angularly oriented relative to each other for conveying the items in respectively different directions corresponding to the angulation between said two sections, the orientation of said supporting members of said first section being aligned with said first conveyor to be adapted to receive the items directly from said first conveyor and convey the items in the direction of said path of conveyance of the items on said first conveyor, an uprightly movable support connected with one of said two sections for positioning said first section at an elevation lower than the other of said sections for transferring the items from said first section to the said other section, powered mechanisms respectively connected with each of said uprightly movable support and said stop for actuating the latter two, a power control system operatively interconnected with an interconnecting said powered mechanisms and including a switch for sychronized actuation of said powered mechanisms and thus sequentially first activating said stop and then activating said uprightly movable support.

4,148,392

VISCID MATERIAL CONVEYOR

Charles Larson, Bellevue; Melvin Van Nocker, Battle Creek, and Robert Sutton, Kalamazoo, all of Mich., assignors to PRAB Conveyors, Inc., Kalamazoo, Mich.

Filed Jul. 11, 1977, Ser. No. 814,287
Int. Cl.² B65G 45/00
U.S. Cl. 198—498 **13 Claims**



1. A conveyor suitable for a viscid material comprising:
conduit means for containing said material and defining a conveying path from a charge station to a discharge station;
a pair of opposed, spaced-apart guide rails situated at one side of said conduit means and defining a slot;
a plurality of spaced conveying flights within said conduit means and traversing said path;
flight transport means connected to said flights for moving said flights along said conveying path and comprising an endless articulated chain slidably mounted within said slot and having said flights secured thereto at spaced intervals, said chain being provided with side links on one side of the chain and overlapping said slot for preventing egress of said viscid material out of said conveying path and with side bars having said flights mounted thereon positioned at spaced intervals along said chain adjacent said side links; and
rotatable flight scraper means at said discharge station for scraping said material from said flights, said scraper means being mounted for rotation along said path and having at least one scraper member projecting into said path at any given point in time so that each of said flights periodically abuts one of said scraper members and drives said scraper means to move said abutting scraper member across a leading surface of said flight thereby scraping said viscid material off of said flight.

7. A conveyor suitable for a viscid material comprising:
conduit means for containing said material and defining a conveying path from a charge station to a discharge station;
a plurality of spaced conveying flights within said conduit means and traversing said path;
flight transport means connected to said flights for moving said flights along said conveying path; and
rotatable flight scraper means at said discharge station for scraping said material from said flights, said scraper means being mounted for rotation along said path and having at least one scraper member projecting into said path at any given point in time so that each of said flights periodically abuts one of said scraper members and drives said scraper means to move said abutting scraper member across a leading surface of said flight thereby scraping said viscid material off of said flight;
said scraper means being provided with auxiliary flight abutment means associated with each said scraper member for periodically abutting the leading surface of said flight, said abutment means being located radially closer to the

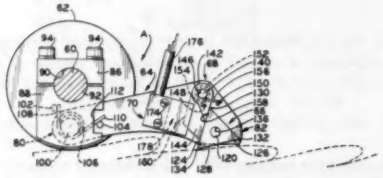
axis of rotation of said scraper means than said scraper member so that each of said flights periodically (a) abuts one of said scraper members and drives said scraper means to rotate through a first portion of a single revolution and (b) subsequently abuts the associated auxiliary abutment means and drives said scraper means to move said scraper off of, and away from, said scraper member as said scraper means continues rotating through a second portion of said single revolution.

4,148,393

SENSING DEVICE AND METHOD

Raymond L. Wiseman, 1550 S. Macon St., Aurora, Colo. 80012

Filed May 27, 1977, Ser. No. 801,153
Int. Cl.[2] G06M *7/00*
U.S. Cl. 198—503 **17 Claims**



1. A sensing device for sensing individual ones of a plurality of articles continuously flowing along a predetermined work path from a first toward a second position therealong, said device comprising:

a sensing device body having spaced apart mounting and sensing ends pivotally mounted at said mounting end adjacent said work path with said sensing end extending generally toward said second position, said body being arcuately movable about said pivot mounting through a sensing plane extending generally longitudinally of said work path;

a sensing member rotatably mounted at generally the central axis thereof adjacent said body sensing end for independent rotation in a plane generally parallel to said sensing plane, said sensing member having a polygonal configuration with the outer peripheral surface thereof comprised of a plurality of alternating distinct sides and corners, said sensing member being incrementally rotated by engagement of the consecutive sides and corners thereof with the leading edges of the individual articles as they flow therepast along said work path from said first toward said second position;

activating means disposed adjacent to and having an elongated substantially straight sensing member engaging surface in physical engagement with said sensing member outer peripheral surface, said activating means being movable between an activating position and a non-activating position responsive to incremental rotation of said sensing member; and,

a transducer disposed on said sensing body adjacent said activating means and being selectively energized by movement of said activating means between said activating and non-activating positions in response to each increment of rotation of said sensing member.

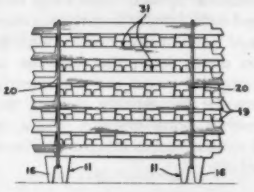
4,148,394

BUNDLE OF SELF-SKIDDED MARGACH INGOTS

Charles Bederman, 52-12 Leith Pl., Little Neck, N.Y. 11362

Continuation-in-part of Ser. No. 709,707, Jul. 29, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 861,829
Int. Cl.[2] B65D *19/24*
U.S. Cl. 206—386 **7 Claims**

1. A platform ingot comprising an elongated body, a pair of spaced legs extending downwardly from each end of said body, said body having a length between said leg pairs sufficient to permit entry of a forklift beneath said body, a breaking notch in said body intermediate said ends, and an attaching notch at each said end in the space between the associated legs



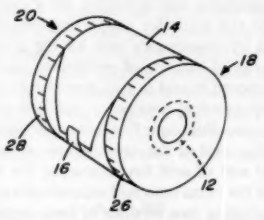
extending between the top and bottom body surfaces, said notch having a restricted opening at the body end and being wider inwardly of the opening, said notch permitting attachment to a continuous chain feed mechanism.

4,148,395

ROLL PACKAGE

Carmelo R. L. Syracuse, East Rochester, and Alan S. Chisek, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,729
Int. Cl.[2] B65D *85/67, 85/671, 85/672*
U.S. Cl. 206—414 **5 Claims**



1. In a package for a roll of light-sensitive strip material coiled on a supporting inner core in convolutions of increasing radius and having generally flat end surfaces, the improvement comprising:

an end cover for each end surface of the roll, each of said end covers (1) overlying at least a portion of the inner core and extending radially outwardly to the outer convolutions of the roll and (2) defining an imperferate, light-tight end cap at least between the inner core and said outer convolutions;

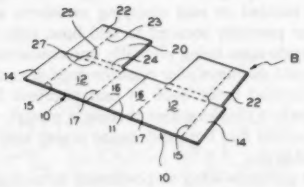
a rim on each end cover folded over the roll circumference and extending axially inwardly of the end surface, said rims (1) cooperating with said outer convolutions and said end caps to enclose said roll of strip material, and (2) having slits extending from the edge of each rim generally axially of the roll toward, but terminating short of, the end surface of the roll; and

means located on at least said rims and on the region of said end caps overlying the inner core for securing said rims to said outer convolutions and said inner core, said end caps being unsecured to the roll convolutions between said core and said outer convolutions.

4,148,396
CUSHIONING INSERT

Jeffrey M. Gardner, Wheaton, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Mar. 29, 1978, Ser. No. 891,306
Int. Cl.[2] B65D 81/00, 5/20
U.S. Cl. 206—521 1 Claim

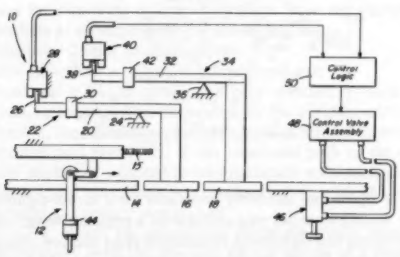


1. A unitary blank of paperboard, or the like, for forming a cushioning insert for an outer container, said blank comprising:
(a) a pair of main sections foldably joined to one another along a fold line disposed centrally of the blank;
(b) each of said main sections including:
(i) a first center panel, an inner panel and an outer panel;
(ii) said inner and outer panels being foldably joined to the respective opposite side edges of said first center panel;
(iii) a second center panel foldably hinged to said first center panel intermediate said side edges by a hinge strap defined by a pair of parallel hinge lines joining said first and second center panels;
(iv) a flap foldably joined to an edge of said second center panel and abutting said outer panel when folded as said insert but being separated from said outer panel by a cut line;
(c) said fold line defining said main sections and defining a side edge of said inner panel of each of said sections when folded to form said insert.

4,148,397
SELECTOR LOGIC FOR WEIGHT SORTING SYSTEMS

William F. Altenpohl, and Paul J. Altenpohl, both of High Point, N.C., assignors to W. F. Altenpohl, Inc., High Point, N.C.

Filed May 17, 1977, Ser. No. 797,742
Int. Cl.[2] B07C 5/22
U.S. Cl. 209—559 5 Claims

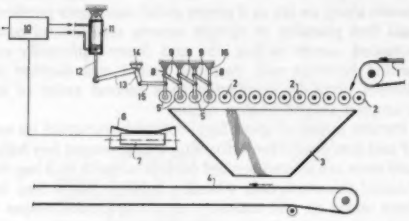


1. In combination with a pair of monitoring devices independently operable during a monitoring cycle respectively establishing upper and lower limits for articles conveyed by carriers along a path, a control system comprising signal operated release means actuated in response to operation of one of said monitoring devices during said monitoring cycle for removal of articles from said carriers, logic means connected to both of said monitoring devices for rendering said one of the monitoring devices ineffective to actuate the release means in response to sequential operation of both of the monitoring devices during the monitoring cycle, means operative independently of carrier travel along said path for prolonging operation of the release means beyond said monitoring cycle, and means responsive to termination of said operation of the release means for resetting the logic means.

4,148,398
ROLLER SCREEN

Lauri A. Mustikka, Tornio, Finland, assignor to Outokumpu Oy, Outokumpu, Finland

Filed Oct. 18, 1977, Ser. No. 843,290
Claims priority, application Finland, Oct. 19, 1976, 762982
Int. Cl.[2] B07C 5/12
U.S. Cl. 209—668 4 Claims

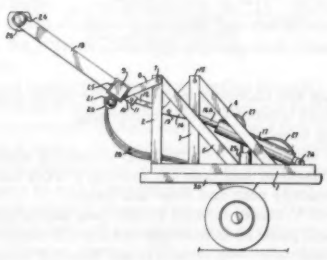


1. A roller screen of the type having a frame and a plurality of rollers rotatably mounted spacedly transversely on said frame in succession, said screen comprising means attached to the frame and at least one of the last of the series of rollers downstream for controlling the distance between at least one of said rollers and at least one other of said rollers, said controlling means comprising pivoting arms affixed at opposite ends of said adjustable rollers with one end attached to one end of the adjustable roller and the other end attached to said frame, intermediate arms pivotably attached between said pivoting arms of adjacent rollers; and means mounted in the frame and operatively connected with said pivoting arms for controlling the distance between the adjustable rollers.

4,148,399
BALE HANDLING APPARATUS

Jackie L. Carter, and Jerry D. Carter, both of Unionville, Mo. 63556

Filed Dec. 20, 1976, Ser. No. 752,151
Int. Cl.[2] B65H 75/40
U.S. Cl. 414—732 4 Claims



1. A device for handling large round hay bales comprising:
(a) a vehicle having a bed thereon;
(b) a rectangular shaped frame means mounted on said bed; said frame further having two bar means positioned within said rectangular shaped frame means and in parallel relationship to the longitudinal sides of said frame means and connected to the end portions of said rectangular shaped frame;
(c) a first plurality of upright means mounted in contact with

and extending upwardly from said rectangular shaped frame means at one end thereof;

(d) a second plurality of upright means mounted on said two bar means and extending upwardly therefrom;

(e) linear beam means having plural strut means mounted thereon with said strut means being pivotally mounted on the upper portion of said first plurality of upright means;

(f) plural arm means slidably mounted on said beam means;

(g) first power actuated means for moving said plural arm means toward and away from each other;

(h) triangular shaped linkage means pivotally mounted on said second plurality of upright means;

(i) connecting means connecting a first point of said triangular shaped linkage means to said beam means;

(j) second power actuated means for moving said beam means along an arc as it pivots about said upper portion of said first plurality of upright means; said second power actuated means having one end thereof pivotally connected between said two bar means and another end thereof pivotally connected to a second point of said triangular shaped linkage means.

(k) friction means in spear form rotatably mounted on each of said arm means for deforming a large round hay bale as said arms are moved toward each other with said hay bale located therebetween, whereby a large round hay bale once raised on said rotatably mounted friction means via said second second power actuated means can be unrolled therefrom for feeding.

4,148,400

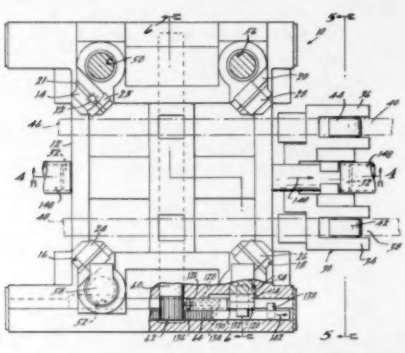
PALLET LOCATOR AND CLAMPING ASSEMBLY

Ralph E. Cross, Grosse Pointe Shores, Mich., assignor to The Cross Company, Fraser, Mich.

Filed Mar. 7, 1977, Ser. No. 774,897

Int. Cl.[2] B65G 25/04

U.S. Cl. 414—750 **20 Claims**



1. A locating and clamping mechanism for use in combination with a work transfer machine comprising,

a supporting base,

mechanism including a longitudinally extending shaft slidably journaled in said base for moving a work carrying pallet vertically onto and from said base,

a plurality of V-blocks secured to said base and adapted to recieve said pallet so as to longitudinally and transversely position said pallet with respect to said base and to support said pellet thereon,

a rack provided on said longitudinal shaft,

a transverse shaft rotatably journaled within said base,

a first pinion centrally disposed on said transverse shaft and engaging said rack on said longitudinal shaft so as to cause rotation of said transverse shaft in response to sliding motion of said longitudinal shaft,

second and third pinions disposed on opposite ends of said transverse shaft,

first and second longitudinal racks slidably mounted on opposite sides of said base and engaging respective of said second and third pinions so as to cause a sliding movement thereof in response to rotation of said transverse shaft,

first and second pairs of clamping members slidably journaled within said base for vertical movement adjacent the inner sides of respective first and second longitudinal racks,

each of said clamping members having a first toggle arm pivotally secured to said clamping members, a second toggle arm pivotally secured to said base, said first and second toggle arms being pivotally interconnected,

first and second members near opposite ends of each of said first and second racks, each of said members having a longitudinally extending bore therein, a plunger slidably disposed within said bore and means urging said plunger out of said bore,

each of said plungers being so positioned as to engage said toggle arms in response to sliding movement of said first and second racks in a first direction to cause said clamping members to move into clamping engagement with said pallet, and

projections adjacent opposite ends of each of said racks adapted to engage said toggle arms in response to movement of said racks in a second direction to cause said clamping members to move out of engagement with said pallet.

4,148,401

TRANSPORT AND ASSEMBLY APPARATUS FOR SCREW-TIGHTENING DEVICES

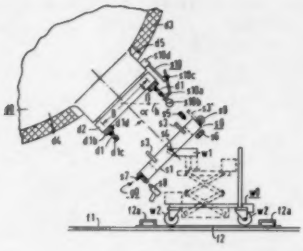
Anton Kautetzky, Forchheim, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Apr. 4, 1977, Ser. No. 784,531

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1976, 2614654

Int. Cl.[2] B66F 5/04

U.S. Cl. 414—590 **14 Claims**



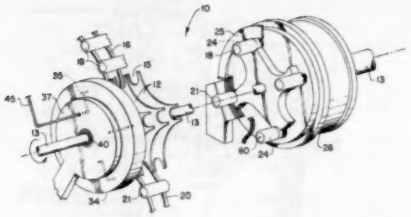
1. Transport and assembly apparatus for a screw-tightening device having a carrier ring seatable on a pressure-vessel cover for loosening and tightening fastening screws thereon comprising a lift truck having an elevating platform whereon a carrier ring is mountable, means for pivoting the carrier ring about a horizontal axis, and means for vertically adjusting the carrier ring with said elevating platform, and including means for mounting a bearing block on said elevating platform, carrier-ring support means carried by said bearing block, and means for pivotally mounting the carrier ring on said support means, said mounting means comprising a platform plate having a pedestal extending therefrom, said bearing block being constructed as a plug bracket and having a relatively longer and a relatively shorter plug sleeve by which said bearing block is pluggable onto said pedestal in two respectively different elevated positions.

4,148,402

DEVICE FOR LOADING CYLINDRICAL ARTICLES

Michael L. Atkinson, Broomfield, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Apr. 18, 1977, Ser. No. 788,188
Int. Cl.[2] B23Q 5/24; B23B 15/00
U.S. Cl. 414—676 6 Claims



1. A device for high speed loading of cylindrical articles closed at one end onto mandrels, the device comprising;

a plurality of mandrels each having a longitudinal passageway defined therethrough and each being spaced on a common circle and carried for rotation on a mandrel support journalled for rotation around the axis of such common circle;

a starwheel mounted for rotation around the axis of such common circle, the starwheel having defined therein a plurality of pockets each axially aligned with and at least partially axially spaced from the corresponding mandrel;

a rotating member mounted concentric with the axis of the common circle and connected for rotation with the starwheel, the rotating member having a plurality of conduits, each having an inlet and an outlet, defined therein with each conduit outlet aligned with a corresponding starwheel pocket and directed toward the corresponding mandrel, and conduit inlets being positioned concentric to the axis of the common circle on an opposite surface of the rotating member;

means for synchronously rotating the starwheel, the mandrel support and the rotating member in a substantially continuous manner at a substantially constant speed;

means for loading cylindrical articles into the starwheel pocket at a first predetermined position;

means for removing cylindrical articles from the starwheel pockets at a second predetermined position;

means providing a vacuum source;

means providing a source of compressed gas;

a fixed valve block member closely interfacing with the rotating member and positioned on the conduit inlet side thereof, the valve block member having defined therein an arcuate port positioned in the rotational path of the conduit inlets and adapted to communicate with such inlets, the arcuate port being in communication with the compressed gas source means; and

first valve means for selectively connecting each mandrel passageway with the vacuum source means at a first selected portion of the rotation of the mandrel support including the position substantially immediately adjacent the conduit opening, and for selectively connecting such mandrel passageway with the compressed gas means at a second selected portion of the rotation of the mandrel support following the first selected portion of such rotation but prior to rotation to position such mandrel passageway at the means for removing the articles from the starwheel at the second predetermined position;

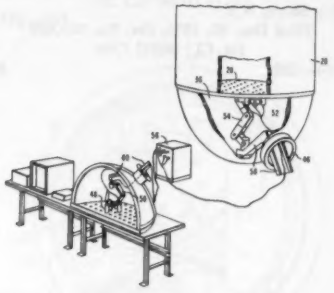
whereby cans deposited in the constantly rotating starwheel pockets at the first predetermined position may be urged towards the constantly rotating mandrel by a gas jet from the aligned conduit outlet opening to provide loading of the cans with aid of the vacuum means but without axial movement of mechanical parts or aid of mechanical positioning means.

4,148,403

REMOTE ACCESS MANIPULATOR

Delmar R. Riffe, Murraysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 13, 1977, Ser. No. 806,233
Int. Cl.[2] B25J 9/00
U.S. Cl. 414—2 6 Claims



1. A remote access manipulator for performing operations on equipment including a slave carriage engageable with said equipment for positioning instruments in relationship to said equipment, a slave manipulator arm located near said slave carriage for positioning said slave carriage and for transferring said instruments to said slave carriage, a master carriage similarly attached to a scale model of said equipment located remote from said equipment whereby manual manipulation of said master carriage is automatically replicated by said slave carriage, a master manipulator arm located near said master carriage for controlling said slave manipulator arm whereby manual manipulation of said master manipulator arm is automatically replicated by said slave manipulator arm, and control means for coordinating movement between said carriages and said arms, said slave carriage comprising:

a body having a first camlock disposed therein for engaging said equipment and having an end effector attachment for engaging said instruments;

a first housing having a first end rotatably attached to said body and having a second end extending outwardly from said body;

a first motor disposed within said first end of said first housing for rotating said first housing with respect to said body;

a second housing having a first portion rotatably attached to said second end of said first housing and having a second portion extending outwardly from said first portion;

a second motor disposed within said first portion of said second housing for rotating said second housing with respect to said first housing;

a second camlock disposed in said second portion of said second housing for engaging said equipment;

a third housing having a first side rotatably attached to said body and having a second side extending outwardly from said body;

a third motor disposed within said first side of said third housing for rotating said third housing with respect to said body;

a fourth housing having a first section rotatably attached to said second side of said third housing and having a second section extending outwardly from said first section;

a fourth motor disposed within said first section of said fourth housing for rotating said fourth housing with respect to said third housing;

a third camlock disposed in said section of said fourth housing for engaging said equipment; and

angle sensing means located with each of said motors for determining the angle of rotation of each of said housings, said housings cooperating to advance said body in relationship to said equipment so as to position said instruments in proper relationship with said equipment so that operations may be performed thereon.

4,148,404

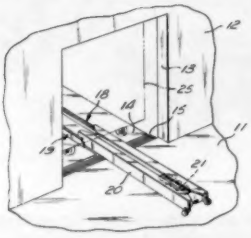
AUTOMATIC LOADER AND UNLOADER

William C. Heisler, Monroe, N.C., assignor to The Peelle Company, Bay Shore, N.Y.

Filed Dec. 10, 1976, Ser. No. 749,409

Int. Cl.² B65G *1/04*

U.S. Cl. 414—259 **20 Claims**



1. A loading and unloading device comprising a frame stationary with respect to horizontal movement and having a longitudinal horizontal axis and at least one stationary guide bar extending in the longitudinal direction, a main carriage having at least one movable guide bar movable therewith extending parallel to said stationary guide bar, said main carriage having a retracted position with its guide bar extending adjacent said stationary frame, slidable bearing means through which both of said guide bars are slidably disposed and which connect said stationary frame and said main carriage, and permitting said main carriage to extend horizontally from said retracted position, a coupler carriage for engaging and disengaging a vehicle, and bearing means movably supporting said coupler carriage on said main carriage for relative movement therebetween in said longitudinal direction, said slidable bearing means being constructed and arranged to provide vertical cantilevered support for said main carriage and said coupler carriage on said stationary frame when said main carriage is extended from said retracted position.

4,148,405

SOLID FEEDER AND METHOD

Thomas J. Hathaway, Belle Meade, N.J., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 1, 1977, Ser. No. 856,367

Int. Cl.² C10J *3/30*

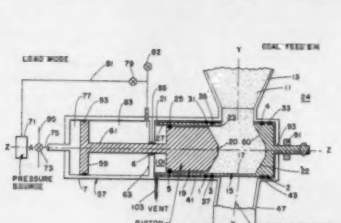
U.S. Cl. 414—207 **11 Claims**

1. The process of feeding coal from a low pressure ambient atmosphere into a reactor for producing fuel gas at high pressure, comprising the steps of:

a. loading coal in an ambient low pressure atmosphere into a longitudinally extending low pressure gas containing bucket having sealed ends in a housing, a closed end, an open end and an orifice, the coal being loaded in a low pressure ambient atmosphere through the orifice between the seals to displace the low pressure gas from the bucket into the low pressure ambient atmosphere through the orifice during a loading mode;

b. rotating the bucket for unloading the coal through the orifice into the reactor during a delivery mode so that the coal is unloaded through the orifice and replaced by high pressure gas from the reactor that is trapped in the bucket;

c. displacing the trapped high pressure gas from the bucket by biasing a plunger having a cone-shaped punch through the open end of the bucket into mating engagement with the closed end of the bucket to expel the displaced high pressure gas back into the reactor during a closed mode; and



d. rotating the bucket for filling the bucket with ambient low pressure gas from the atmosphere through the orifice during a reloading mode substantially without letting the high pressure gas escape to the low pressure ambient atmosphere through the bucket during said filling, loading, unloading and displacing so as to conserve the high pressure gas power in the reactor during all of said modes.

4,148,406

WARP BEAM TRANSPORT CARRIAGE FOR TWIN WARP BEAMS

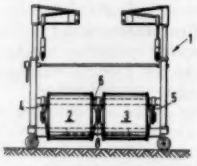
Gerhard Kutzschebauch, Dirlos Dicker Turm, Fed. Rep. of Germany, assignor to System Schultheis GmbH & Co., Fulda, Fed. Rep. of Germany

Filed Aug. 4, 1977, Ser. No. 821,833

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1976, 2635524

Int. Cl.² B60P *3/00*

U.S. Cl. 414—458 **8 Claims**



1. A warp beam transport and elevating carriage comprising:

a carriage frame;

a longitudinally extending shaft mounted on the carriage frame for rotational movement about the longitudinal axis of the shaft;

a plurality of warp beams mounted along the longitudinally extending shaft;

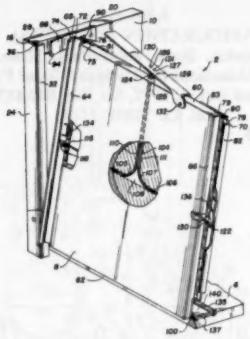
means for gripping the end portions of the warp beams and connecting the warp beams with the longitudinally extending shaft wherein said gripping means comprises gripper arms each connected at one end to the longitudinally extending shaft and extending pendularly downward about an axis oblique to the axial direction of the longitudinally extending shaft whereby resolution of a moment of force from the weight of the warp beam secures the gripping means to the warp beams by exerting a thrust through the lower end of the outside gripper arms against the outside end portions of the warp beams.

4,148,407

COLLAPSIBLE CONTAINER WITH LOADING RAMP

Lorne R. Sinclair, 1549 W. 32nd Ave., Vancouver, British Columbia, Canada (V6J 3A5)

Filed Apr. 24, 1978, Ser. No. 899,206
Int. Cl.[2] B65D *7/24*
U.S. Cl. 220—7 12 Claims



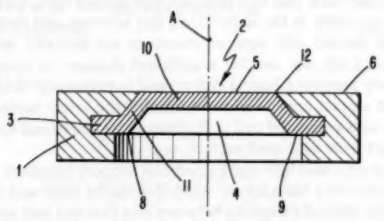
1. A container comprising:
a generally rectangular top, bottom and four sides, the sides each having two ends which are normally vertical;
hinge means generally adjacent the bottom and one side permitting the one side to pivot outwardly;
first members with outwardly directed flange means near the ends of the one side;
second members with inwardly directed flange means on ends of two other sides adjacent the ends of the one side, the first members being engageable with the second members to constrain outward movement of the one side about the hinge means;
means constraining inward movement of the one side when engaged;
and disengaging means for deflecting the outwardly directed flange means to permit the one side to pivot outwardly about the hinge means for loading and unloading the container.

4,148,408

CAPACITOR CLOSURE DISC AND METHOD FOR MAKING SAME

Franz-Josef Wolf, Bad Soden-Salmünster, Fed. Rep. of Germany, assignor to WOCO Franz-Josef Wolf & Co., Soden-Salmünster, Fed. Rep. of Germany

Filed Apr. 13, 1978, Ser. No. 896,054
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1977, 2718228
Int. Cl.[2] B65D *35/44, 43/00, 51/00*
U.S. Cl. 220—200 13 Claims



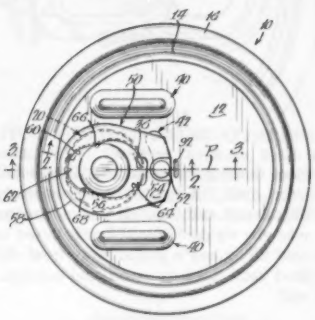
1. A capacitor closure unit for sealingly closing-off a capacitor housing, the unit being of the type which includes a metal plate encircled along its periphery by sealing and electrically insulating material, the improvement wherein said plate includes a central, axially recessed or projecting portion which is symmetrical about the central longitudinal axis of the plate to facilitate centering of the plate within the cavity of an injection mold, and a coating of injection-molded sealing material encircling said plate peripheral to said recessed or projecting portion.

4,148,409

PERMANENTLY ATTACHING END OPENING MEANS

Arthur P. Zundel, Mount Prospect, Ill., assignor to National Can Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 789,096, Apr. 20, 1977, abandoned. This application Jan. 30, 1978, Ser. No. 873,548
Int. Cl.[2] B65D *41/32*
U.S. Cl. 220—267 24 Claims



1. An end panel for a container comprising a circular generally flat central panel portion having an outer and an inner surface with a weakened line defining a severable section which produces a pour opening located between the center of panel portion and the periphery thereof, a metal tab for severing said weakened line, said tab having a main body covering said weakened line and a connecting end extending toward the center of said panel portion, a permanent connection between said panel portion and said connecting end and located between the center of said panel portion and said severable section, said main body having an opening with a flange extending from the periphery of said opening toward said severable section, said flange having primary contact means aligned with an inner edge of said weakened line, urging means in said connecting end for urging said primary contact means into engagement with said severable section, and a blister in said severable section extending into said opening in said main body of said metal tab.

4,148,410

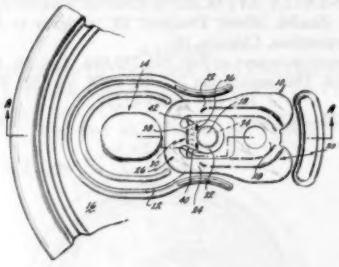
TAB FOR EASY-OPEN ECOLOGY END

Omar L. Brown, Dayton, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio

Filed Jan. 30, 1978, Ser. No. 873,268
Int. Cl.[2] B65D *41/32*
U.S. Cl. 220—269 4 Claims

1. A tab of the type affixed to a can end for opening it and comprising:
a unitary structure including
a lifting end;
an opening end opposite said lifting end and spaced from it;
spaced leg members connecting said lifting end and said opening end; and,
a flap extending longitudinally from said opening end toward said lifting end between said spaced leg members, spaced from said spaced leg members and from said lifing end, including an affixing portion by which said flap is affixed to the can end, said affixing portion spaced from said opening end, the width of said flap varying along the

length of said flap to define a first bending region extending laterally across said flap adjacent said affixing portion and a second bending region extending laterally across said flap adjacent said opening end, the width of said flap in said second bending region being sufficiently small relative to the width of said flap in said first bending region that after said lifting end has been pulled away



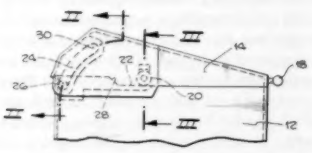
from the can, thereby flexing said flap in said first bending region, when said lifting end is subsequently pushed toward the can end, said flap flexes in said second bending region, whereby no part of said flap is flexed more than once as said lifting end is pulled away from the can and then pushed back towards its original position adjacent the can end.

4,148,411

NON-JAMMING BIN LID SYSTEM

Allan M. Hodge, 5852 Lomond Dr., San Diego, Calif. 92120, and Craig V. Taylor, 8924 Enfield Ave., Northridge, Calif. 91324

Filed Apr. 20, 1978, Ser. No. 898,381
Int. Cl.[2] B65D *43/14, 51/04*
U.S. Cl. 220—331 **9 Claims**



1. A commercial trash bin and lid system comprising:

a large generally rectangular commercial trash bin;

means secured to said bin to facilitate raising said bin and turning it upside down to dump it;

a lid for said bin;

means for supporting said lid near its balancing point to permit easy opening of said lid;

means for guiding and restraining the rear of said lid as it is opened, said means including a pair of pins or rollers extending laterally from the top rear of the sides of said bin, and a pair of guideways secured to the rear sides of said lid, for guiding the position of the rear of said lid as it is partially opened using said supporting means while said bin is in the upright orientation;

means for stopping the movement of said lid in a partially open position when it is opened in the upright orientation;

said guideways extending generally upward from said pins when said lid is closed;

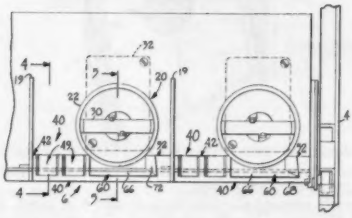
means for permitting said lid to swing wide open with said lid pivoting about said pins or rollers in one end of said guideways and with said supporting means inoperative, when said bin is turned upside down for dumping, with each said guideway extending to the rear from the pivot point, whereby vertical vibration of said bin to dislodge trash when said bin is in the upside-down orientation will not jam or damage said pins or guideways.

4,148,412

SHELF CONFIGURATION FOR SPIRAL VENDOR

Joseph A. Lotspeich, South Saint Paul, Minn., assignor to Gross-Given Manufacturing Company, Saint Paul, Minn.

Filed Oct. 6, 1977, Ser. No. 839,817
Int. Cl.[2] G07F *11/36*
U.S. Cl. 221—75 **3 Claims**



1. Support apparatus for rotatably supporting an elongated semi-rigid helical coil, of the type used for dispensing articles from a dispensing machine, above a substantially planar shelf surface having a front edge, comprising:

(a) a first elongated coil support member defining a first generally planar upper surface disposed to lie above and generally parallel to a shelf surface and adjacent a front edge thereof, said first upper surface being terminated at first and second longitudinally opposed ends thereof, wherein said first end of said first coil support member defines a first ramp surface forming an inclined continuum in the longitudinal direction of said first coil support member between said shelf surface and said first upper surface;

(b) a second elongated coil support member defining a second generally planar upper surface disposed to lie above and generally parallel to said shelf surface and adjacent said front edge thereof, said second upper surface being terminated at first and second longitudinally opposed ends thereof, wherein said first end of said second coil support member defines a second ramp surface forming an inclined continuum in the longitudinal direction of said second coil support member between said shelf surface and said second upper surface;

(c) said first and said second coil support members being disposed in spaced, generally parallel relationship to one another such that said first and said second ramp surfaces lie generally in the same plane, and wherein said first and said second coil support members are laterally spaced apart from one another a sufficient distance to cooperatively support a helical coil on and between said first and said second upper surfaces such that the lower surface of the said supported coil is disposed to lie above and spaced apart from said shelf surface; and

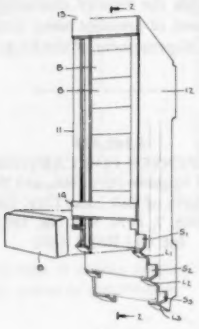
(d) wherein said first and second coil support members each respectively has a lateral width defined by inner and outer edges thereof extending between said first and said second ends thereof, and wherein that portion of said inner edge of said second coil support member which lies adjacent said second end thereof is beveled outwardly in the longitudinal direction of said second coil support member to further assist the discharge of articles from the dispensing machine.

4,148,413

MULTI-CHANNELBOX-DISPENSER UNIT

Vincent J. Immordino, Flushing, N.Y., assignor to Display Originals, Inc., West Babylon, N.Y.

Filed Apr. 13, 1977, Ser. No. 787,006
Int. Cl.[2] A47F 1/08
U.S. Cl. 221—92 **3 Claims**



1. A box dispenser unit including a blank formed of thermoplastic material created from an injection-molded flat blank in a one-piece operation, the blank thereafter being thermally foldable to assume the desired configuration, said unit comprising:

A a flat blank constituted by a back wall section and a pair of opposing side wall sections integral with the back wall section, said back wall section being formed by upper and lower rectangular parts having an opening therebetween, the back wall parts having grooves adjacent their junctions with the side wall sections to facilitate thermal folding, each side wall section having a series of longitudinally-extended ridges all of the same height formed thereon at corresponding-spaced positions, the outermost ridge running along the edge of the side wall section and the innermost ridge running along the junction of the side wall section having a progressively-stepped formation, the ridges at these steps terminating in holding ledges, whereby when the side wall sections are thermally folded in to assume parallel positions at right angles to the back wall section, the ridges then define a plurality of parallel channels each adapted to receive a stack of said boxes which are removable from discharge openings formed by said steps; and

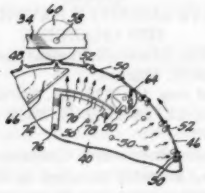
B slats bridging the outermost ridges of the parallel side wall sections.

4,148,414

ROW CROP PLANTER

Earl R. Parks, Jr., 0141 W Rd. 700S, La Porte, Ind. 46350

Filed Dec. 1, 1977, Ser. No. 856,264
Int. Cl.[2] B65H 3/08
U.S. Cl. 221—278 **8 Claims**



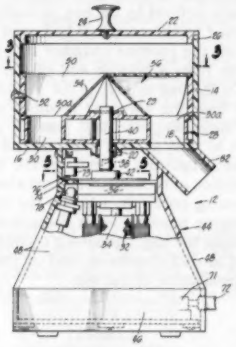
1. In a row crop planter comprising a rotatable seed drum having a plurality of circumferential peripheral series of apertures surrounded by seed-receiving projections, means for delivering seed into said drum, means for discharging air under pressure into said drum to position and retain seeds at and adjacent each aperture as the drum rotates, roller means positioned exteriorly of and above said drum and engageable with said projections, collecting and distributing means positioned within said drum below said roller means, and a brush within the upper part of said drum in counter-rotational spaced relation to said roller means for engaging and releasing into the lower position of said drum seeds in excess of a single seed positioned at and adjacent each projection, the improvement comprising an air permeable seed barrier positioned in said drum between said collecting and distributing means and said brush to prevent reattachment of seeds at the portion of the drum between the brush and the distributing means.

4,148,415

AUTOMATIC DISPENSING APPARATUS

Roy R. Florida, 201 N. Deerfield, Anaheim, Calif. 92807, and Glen J. Connelly, 822 E. Alder, Brea, Calif. 92621

Continuation of Ser. No. 693,294, Jun. 7, 1976, abandoned. This application Dec. 20, 1977, Ser. No. 862,557
Int. Cl.[2] G01F 11/10
U.S. Cl. 222—76 **5 Claims**



3. A material dispensing apparatus for dispensing granular materials such as coffee, sugar, spices and the like comprising:

(a) a container for containing the material to be dispensed, said container having a discharge opening;

(b) material dispensing means mounted for rotary movement within said container for dispensing predetermined measures of material from said container, said dispensing means having formed therein a plurality of material measuring cavities in communication with the material contained in said container;

(c) drive means for rotating said material dispensing means;

(d) control means for controlling said drive means to rotate said material dispensing means to sequentially index said cavities with said discharge opening; and

(e) distribution means mounted within said container for controllably distributing the material therewithin to said measuring cavities, said distribution means comprising:

(1) a plurality of partitioning members superimposed above said dispensing means, said members extending radially outwardly from the central axis of said container and having their lower edges in close proximity with said dispensing means; and

(2) a hood portion superimposed above said discharge opening in said container.

4,148,416

AEROSOL CONTAINERS

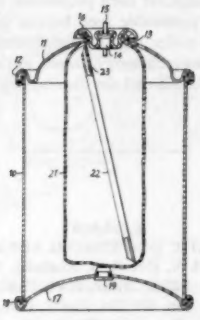
Ronald A. Gunn-Smith, Hampton Court, England, assignor to Metal Box Limited, Reading, England

Filed Aug. 11, 1977, Ser. No. 823,734

Claims priority, application United Kingdom, Aug. 20, 1976, 34722/76

Int. Cl.[2] B65D *83/14*

U.S. Cl. 222—94 **10 Claims**



1. An aerosol dispensing container comprising a container body, a collapsible bag therein to separate a propellant chamber defined between the container body and the bag from a product chamber defined by the bag, actuable aerosol dispensing means carried by the container body and arranged in communication with the product chamber at a dispensing end of the bag remote from a bottom end of the bag, an elongate member within the bag extending for substantially the whole length of the bag, the elongted member having a top end adjacent said dispensing end and passage means adapted to allow product to pass at least from its end remote from the dispensing means into the vicinity of the dispensing means, despite constriction of the bag around the elongated member as product dispensing proceeds, wherein the improvement comprises the elongate member being completely free, loose and unattached within the bag, but having a length such that its top end is located at said dispensing end of the bag at all times during said constriction of the bag.

4,148,417

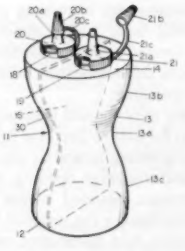
FLUID DISPENSER

Michael J. Simmons, 2757 Tremainsville, Toledo, Ohio 43613

Filed Nov. 29, 1976, Ser. No. 745,698

Int. Cl.[2] B65D *35/22*

U.S. Cl. 222—94 **2 Claims**



1. A squeeze dispenser for flowable product comprising a hollow container defined by a (generally annular body wall of circular cross-section and formed of flexible material, a connected transverse bottom wall, at least one connected interior partition wall dividing said container into a plurality of compartments, a connected top wall, said top wall including integral upstanding nozzles constructed and arranged with discharge orifices for dispensement of flowable product from said separate compartments responsive to opposed compression forces on said body wall, said body wall featuring a circular contour (upon which) uniformally converging in a direction away from said top wall, so that opposed, normally-applied, compression forces exert an increased moment of force or pressure parallel with the axis of discharge of said nozzle openings, said moment of pressure being exerted on flowable product to enhance dispensement or discharge of said product.

4,148,418

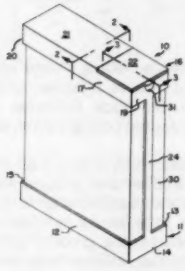
DISPENSER FOR CARTONS

Gary B. Ewing, 1731 Meadow Moor Rd., and Wayne A. Provost, P.O. Box 17022, both of Salt Lake City, Utah 84117

Filed Oct. 7, 1976, Ser. No. 730,576

Int. Cl.[2] B67D *5/06*

U.S. Cl. 222—183 **4 Claims**



1. A low cost dispenser comprising

an upper frame adapted to receive and closely surround an upper end of a carton, said upper frame including spaced apart side members interconnected by spaced apart end members and a top extending thereover and having a flap formed in the top thereof;

a lower frame adapted to receive and closely surround a lower end of the carton, said lower frame comprising

a pair of spaced apart, somewhat resilient side members;

a pair of spaced apart end members interconnecting said side members;

a pair of members, one of which interconnects a pair of end members of the upper and lower frames and the other of which interconnects the other end members of said frames; and

a lug fixed to and projecting inwardly from each side member of the lower frame.

4,148,419

AEROSOL VALVE ASSEMBLY HAVING GAS DIFFUSER FOR CHARGING

Leonard I. MacNair, Greenford, England, assignor to Metal Box Limited, Berkshire, England

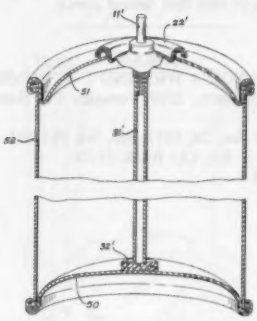
Filed Aug. 12, 1977, Ser. No. 823,917

Int. Cl.[2] B65D *83/14*; B65B *3/04*

U.S. Cl. 222—189 **5 Claims**

1. An aerosol container, which comprises a closed container body and a valve assembly mounted on the same, the valve assembly comprising a pressure filling valve and a dip tube attached to the valve and extending therefrom to a free end which is located adjacent, but spaced from, a remote end of the container body, a member of resilient foamed material, of open

pore structure disposed against the said remote end of the container body, the said member indented by the said



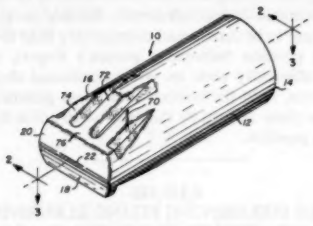
free end of the dip tube in sealing relation thereto but insufficiently to close the pores of the member.

4,148,420

SELF-SEALING CAPS FOR SQUEEZE-TYPE CONTAINERS

Alfred B. Morrissette, Sausalito; Donald W. Nusbaum, Mountain View, and Charles B. Briggs, Atherton, all of Calif., assignors to Scale Models Unlimited, Menlo Park, Calif.

Filed Jan. 30, 1978, Ser. No. 873,484
Int. Cl.² B65D *35/52*
U.S. Cl. 222—494 **15 Claims**



1. In a squeeze-type container having an openable closure adapted to open for dispensing the contents of the container in response to the application of pressure to the container, the closure comprising:

opposed, resilient, side wall portions terminating on one end into abutting lips;

end wall portions integral with and extending between said side wall portions to opposite ends of said lips said side wall portions and said end wall portions being externally unsupported;

the other end of said side wall portion and said end wall portions being formed and dimensioned for coupling to the container; and

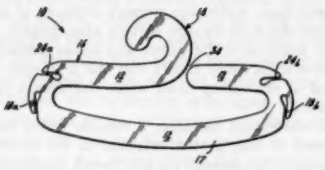
said lips having outwardly and rearwardly sloping planar exterior faces and outwardly and rearwardly sloping interior faces, the angle between the center line of the closure and each of said exterior faces is not greater than 80°, the intersection of said exterior and interior faces forming sharp edges which define a normally closed slit-type outlet through which the contents of the container is dispensed.

4,148,421

HANGER

Herbert Levitt, Yonkers, N.Y., assignor to Warnaco, Inc., Bridgeport, Conn.

Filed Mar. 9, 1978, Ser. No. 884,915
Int. Cl.² A47J *51/097*
U.S. Cl. 223—87 **2 Claims**



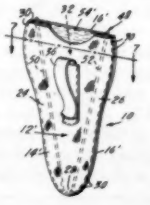
1. A hanger for suspending various articles of clothing comprising a flat continuous strip of substantially rigid material, said strip extending convolutely from a free end thereof to define a flat hanger body portion having a relatively wide, elongated opening therein, said strip forming an elongated bar extending over the entire width of said body portion at the bottom of said opening for suspending a first article of clothing passed into said opening from said hanger, said strip further extending centrally from the top of said hanger body portion to the other end thereof to form a hook for said hanger, said hook confronting the free end of said strip to define a smoothly contoured passage through which said first article of clothing can be passed directly into the central portion of said opening to be suspended by said elongated bar, said body portion having a first pair of downwardly opening elongated slots, each of said first pair of slots being formed in a corresponding end of said body portion in the vicinity of respective ends of said elongated bar and having a relatively narrow spacing which leads to a wider opening at the end of each slot, respectively, for suspending a second article of clothing from said hanger.

4,148,422

HOLDER FOR A SMOKING-PIPE

Adam L. Habler, 4851 Gandy-15-2nd, Tampa, Fla. 33611

Division of Ser. No. 576,707, May 12, 1975, Pat. No. 4,055,283.
This application Aug. 10, 1977, Ser. No. 823,274
Int. Cl.² A45C *11/00*
U.S. Cl. 224—5 R **14 Claims**



10. A holder for a smoking-pipe having a substantially straight stem and a bowl, comprising:

a substantially flat, substantially rigid sheath having

(a) substantially rigid front and back walls each of a single material thickness, in opposed, substantially parallel relationship, the interior surface of one of said walls having a high friction surface area, said walls having top edges unconnected along substantially the entirety of their lengths and which define a mouth, longitudinal side edge portions, and a bottom edge portion, said side edge portions adjoining said bottom edge portion, and said portions in combination with said walls and said top edges, defining a cavity for receiving a substantially straight pipe stem, and

(b) fastening means connected to the outer surface of one of the walls, for fastening the holder to a support in a manner that the pipe stem normally points downward toward the sheath bottom edge, the walls being sufficiently close spatially to each other and sufficiently taut laterally from said edge portion to side edge portion and transversely from wall to wall, that when the pipe stem is inserted through the mouth substantially fully into the cavity in a manner that the pipe bit is substantially parallel to the front and back walls, the interior surfaces of the walls, including the high friction surface area, engage and frictionally pinch-hold the upper and lower surfaces of the pipe stem sufficiently firmly that the pipe stem is firmly retained in the cavity even when the sheath is pointed downward,

(c) as an individual element, a flexible hood removably connected to the sheath, adapted to be conformed to substantially the shape of the pipe bowl, the sheath and the hood having means for removably connecting the hood to the sheath, and the hood providing protection for the bowl and cooperating with the walls in retaining the stem in the cavity when the sheath mouth is pointed downward, and

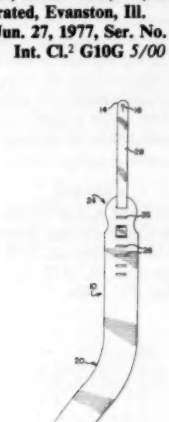
(d) tautening means in the form of a substantially V-shaped metal spring wire seated in the cavity substantially along the wall side and bottom edge portions, for tautening the sheath walls to increase their frictional pinch-hold on a pipe stem inserted in the cavity.

4,148,423

SHOULDER STRAP FOR MUSICAL INSTRUMENT

Rudolf W. Schlacher, Riverwoods, Ill., assignor to Fretted Industries, Incorporated, Evanston, Ill.

Filed Jun. 27, 1977, Ser. No. 810,635
Int. Cl.[2] G10G *5/00*
U.S. Cl. 224—258 **4 Claims**



1. In a shoulder strap for holding a musical instrument comprising an elongated piece of material adapted to be attached to said instrument near each end of said strap; the improvement wherein said strap comprises:

a first generally straight portion adjacent one end of said strap and having a first longitudinal axis;

a second generally straight portion extending from one end of said first portion and having a second longitudinal axis which forms an acute angle with an extension of said first longitudinal axis thereby forming a first lateral curve with respect to said first portion to conform to a user's shoulder; and

a third generally straight portion extending from one end of said second portion and having a third longitudinal axis which forms a second angle with an extension of said second longitudinal axis thereby forming a second lateral curve with respect to said second portion in a direction opposite that of said first lateral curve.

4,148,424

HOLDER FOR A WRITING INSTRUMENT

Herman W. Fortenberry, 1519 Veronica Pl., Santa Barbara, Calif. 93105

Filed Jan. 24, 1977, Ser. No. 761,887
Int. Cl.[2] B43K *23/00*
U.S. Cl. 224—218 **9 Claims**

1. A holder for a writing instrument comprising:

a wide, flexible band adapted to completely encircle a person's hand about the palm area, and

clip means forming a portion of the band into an adjustable loop to provide a writing instrument receptacle adapted to hold the writing instrument and, when the band is attached about a person's hand, for generally holding the instrument with its longitudinal axis in line with the plane defined by the palm area, the band communicating with the loop through the clip means whereby tension in the band when about a person's hand is transmitted to the loop forming the writing instrument receptacle, the band and the receptacle being sufficiently flexible to permit the instrument to be turned and comfortably held in a normal writing position between a person's fingers, the band being sufficiently wide to, when positioned about a person's palm, hold the writing instrument generally in line with the plane defined by the palm when not in the normal writing position.

4,148,425

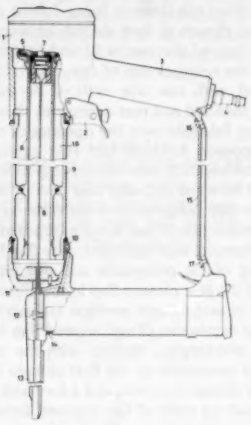
APPARATUS FOR DRIVING FIXING ELEMENTS, SUCH AS NAILS AND STAPLES, TO POSITIONS ACCESSIBLE WITH DIFFICULTY

Umberto Monacelli, Via Parini 6, Monza, Milan, Italy

Filed Sep. 15, 1977, Ser. No. 834,261
Claims priority, application Italy, Sep. 15, 1976, 22106 B/76
Int. Cl.[2] B25C *1/04*
U.S. Cl. 227—130 **1 Claim**

1. An apparatus for driving fastners, such as nails and staples, into positions accessible with difficulty, comprising a pneumatic cylinder in which a piston carrying a hammer for inserting the fastners is slidingly housed, a nose lowerly projecting from said cylinder to house and slidingly guide said hammer during the operating strokes of said piston, a casing member mechanically connecting said cylinder and nose, a fastner supply magazine so supported by said casing member as to transversely extend from said hose, a pneumatic actuating head above said cylinder, a compressed air reservoir transversely extending from said head, a cylindrical jacket coaxially positioned about said cylinder to mechanically connect said head to said casing member and a bracket for mechanically connecting the rear portions of said reservoir and casing member, characterized in that said nose, said jacket and said bracket are connected to said casing member, said head and said reservoir

by removable means allowing the replacement thereof and also of said cylinder and said hammer, by different length corresponding elements for quickly adapting the apparatus to working places of different accessibility and in particular of different depth.

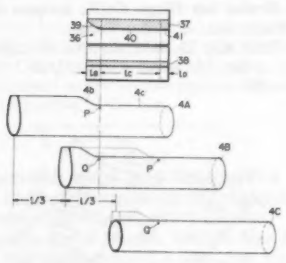


4,148,426

METHOD AND APPARATUS FOR MANUFACTURING METAL PIPE

Wataru Midzutani, Kitakyushu; Toshio Kikuma, Mizumaki; Koe Nakajima, Nakama, and Seiichi Sasahira, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 31, 1977, Ser. No. 829,464
Claims priority, application Japan, Sep. 10, 1976, 51-109189
Int. Cl.[2] B23K *31/06;* **B21D** *39/02, 51/00*
U.S. Cl. 228—146 **9 Claims**



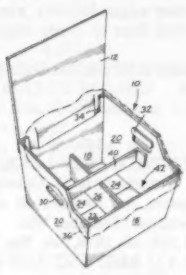
1. A method of manufacturing metal pipe comprising the steps of bending the edges of a metal plate up slightly, further bending the thus bent plate into a U-shape cross-section blank, finish forming the U-shape blank into an O-shaped blank with the longitudinal edges opposed to each other in position for welding by placing one end of the U-shaped blank into at least one two-part die the parts of which are movable toward and away from each other and having at least one portion with the shape of the opposed die recesses defining a reforming area on one end of the die portion which has an O-shaped cross-section, a finish forming area in the middle of the length of the die portion having an O-shaped cross-section, said O-shaped cross-sections being in the shaped of the O-shaped blank, and a transitional area at the other endof the die portion having a cross-sectonal shape which changes gradually from an O-shape adjacent the finish forming area to an oval shape elongated in the direction of movement of the die parts at the other end of the die portion, the transitional area being relatively short as compared to the remainder of the die parts, said at least one die portion being shorter than the length of the blank, the U-shaped blank being placed in the die with the elongated dimension of the oval shape and with one end of the blank at said one end of said die portion, closing the two part die by moving the parts toward each other for shaping the U-shaped blank into a blank having an O-shaped cross-section reformed portion on said one end of the blank, a finished O-shaped cross-section and a transitional section, opening the two part die by moving the parts away from each other, moving the thus formed blank along the die until the edge of the transitional section of the blank is at the end of the finished forming area of the die portion adjacent the reforming area, again closing the die, repeating the steps of the positioning the blank and opening and closing the die until the blank is completely formed into an O-shaped cross-section, and welding the opposed edges of the plate to produce the O-shaped cross-section blank.

4,148,427

FLOWER CONTAINER

Robert L. Baker, Portland, Oreg., assignor to Chase Gardens Wholesale, Inc., Portland, Oreg.

Filed Jan. 19, 1978, Ser. No. 870,625
Int. Cl.[2] B65D *5/48, 5/60*
U.S. Cl. 229—15 **5 Claims**



1. A container for transport and display of cut flowers or the like comprising

a cardboard box,

a lower divider partitioning the lower region of said box,

a water-tight plastic bag lining the inside of said box and opposite sides of said divider, forming two water-tight bottom compartments in said lower region, and

an upper divider positioned within said box and said bag, attached at its opposite ends to opposite upper interior regions of said box, with portions of said bag secured between said box and said ends, said upper divider being disposed substantially crosswise of said lower divider, forming therewith four upright compartments, each capable of holding water in its bottom region.

4,148,428

CONVERTIBLE PARTITION ARRANGEMENT

Jeffrey M. Gardner, Wheaton, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Mar. 3, 1978, Ser. No. 883,056
Int. Cl.[2] B65D *5/48*
U.S. Cl. 229—15 **3 Claims**

1. In a convertible partition, formed of foldable sheet material such as paperboard, for forming a plurality of cells within an outer package, the combination of:

(a) a pair of vertically disposed, transverse members spaced from each other in parallel relation at opposite ends of said partition;

(b) first, second, and third vertically disposed, longitudinal members extending between said transverse members and

normal thereto, and spaced from each other in parallel relation;

(c) each of said longitudinal members comprising a single panel;

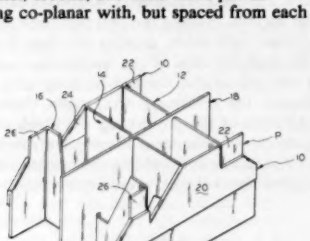
(d) each of said transverse members including:

(i) an outer panel;

(ii) first, second, and third inner panels;

(e) said first, second, and third inner panels:

(i) being co-planar with, but spaced from each other;



(ii) having certain edges foldably joined along vertical fold lines to adjacent end edges of said first, second, and third longitudinal members, respectively;

(iii) having other edges foldably joined along diagonally extending fold lines to upper edges of a related outer panel;

(iv) being folded in face-to-face relation with said related outer panel.

4,148,429

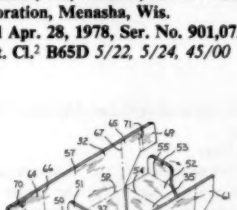
RECEPTACLE WITH SELF-LOCKING CLOSURE

Richard R. Burr, Neenah; Lyle G. Gabrielson, Menasha, and Richard R. Masten, Jr., Neenah, all of Wis., assignors to Menasha Corporation, Menasha, Wis.

Filed Apr. 28, 1978, Ser. No. 901,072

Int. Cl.[2] **B65D** *5/22, 5/24, 45/00*

U.S. Cl. 229—36 **12 Claims**



1. In a receptacle formed from a single piece of sheet material appropriately scored for fold assembly, said receptacle having a forward wall, rear wall and opposed side walls integrally connected to a bottom and providing for an upwardly facing opening, corner gussets between the forward wall and respective side walls and between the rear wall and respective side walls and projecting outwardly relative to the walls of the receptacle, said forward corner gussets being folded in opposed relation along the outside face of the forward wall of the receptacle, said rear corner gussets being folded in opposed relation along the outside face of the rear wall of the receptacle, a flap member on each said forward and rear wall, a first fore-and-aft extending locking tab on the free extremity of each flap member, said forward flap member being folded forwardly and downwardly over the corresponding opposed corner gussets with the first locking tab thereon being folded upwardly and under said corner gussets to lock the tab between said gussets and the outside face of the forward wall and thereby set up and lastingly secure the forward portion of the receptacle, said rear flap member being folded rearwardly and downwardly over the corresponding opposed corner gussets with the first locking tab thereon being folded upwardly and under said corner gussets to lock the tab between said gussets and the outside face of the rear wall and thereby set up and lastingly secure the rear portion of the receptacle, a first closure flap integral with one side wall of the receptacle and having opposed forward and rear extensions thereon, said first closure flap being foldable over the opening of the receptacle and with the opposed forward and rear extensions thereof being foldable downwardly over the corresponding folded flap members on said forward wall and rear wall of the receptacle, a second closure flap integral with the other of the opposed side walls of the receptacle and having opposed forward and rear extensions thereon, said second closure flap being foldable over the opening of the receptacle and overlapping with at least a portion of the first closure flap in the closure position to secure the latter in said closure position and with the opposed forward and rear extensions of said second flap being foldable downwardly in overlapping relation with the corresponding forward and rear extensions of the first closure flap to secure the latter in their closure position, and a fore-and-aft extending second locking tab on each of the opposed forward and rear extensions of the second closure flap, said second locking tab on the forward extension of the second closure flap being foldable upwardly and under the first locking tab on the forward flap member to lock the second locking tab on the forward extension of the second closure flap between said first locking tab and the outside face of the forward wall and thereby lastingly secure the forward portion of the receptacle closure flaps, said second locking tab on the rear extension of the second closure flap being foldable upwardly and under the first locking tab on the rear flap member to lock the second locking tab on said rear extension of said second closure flap between the first locking tab and the outside face of the rear wall and thereby lastingly secure the rear portion of the receptacle closure flaps.

4,148,430

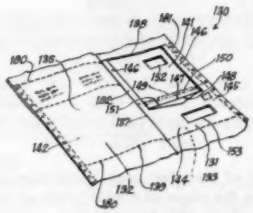
BUSINESS FORM

Terrance L. Drake, San Diego, Calif., assignor to Innovative Business Forms, Inc., El Cajon, Calif.

Filed May 25, 1977, Ser. No. 800,295

Int. Cl.[2] **B65D** *27/10, 27/06*

U.S. Cl. 229—69 **3 Claims**



1. A continuous series of improved Business Forms comprising: a plurality of similar improved Business Forms, having integral mailing envelopes, customers statement, and return envelope, delimited by a plurality of transverse tear perforations; each of said improved Business Forms comprising: an outer sheet having a longitudinal releasable center line of weakening whereby to form a first side and a second side, said second side being adapted to receive formatted statement information whereby to form said customer statement, an inner sheet having a portion thereof parallel to and adjacent to said center line, means for securing said inner sheet only to said first side whereby no part of said inner sheet is secured to said second side, said outer sheet and secured inner sheet forming said return envelope, said outer and secured inner sheet being

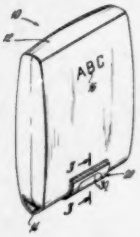
adapted for folding along said center line, and means for releasably securing the outer edges of the mating surfaces of said first side and said second side whereby to form said mailing envelope, said first side having a sending die-cut opening, said formatted statement information including a customer name and address is positioned so that the customer name and address is in register with and visible through said sending die-cut opening in said first side of said outer sheet of said folding mailing envelope.

4,148,431

COLLAPSIBLE HANDLE FOR MULTI-WALL BAG

J. George Lepisto, Middletown, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 28, 1978, Ser. No. 901,193
Int. Cl.[2] B65D *33/06*
U.S. Cl. 229—54 R **4 Claims**



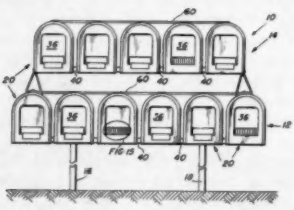
1. In combination with a paper bag having a fillable top portion and a rounded continuous closed bottom portion having a central peak portion for supporting the bag as it is being filled, a collapsible handle rigidly secured to the bottom portion of the bag, the collapsible handle including two opposed support portions, each support portion being secured to opposite sides of said peak portion and an integral handle portion hingedly connected to each support portion along a fold line, said fold lines being generally coextensive with said peak portion, the handle portions including aligned central apertures for facilitating grasping of the handle for carrying the bag in an inverted position, each of said handle portions initially being folded against and temporarily affixed to its associated support portion such that the handle substantially conforms to the configuration of the bottom portion of the bag, and the bag may be stood upright on the bottom portion thereof for filling through the top portion of the bag.

4,148,432

GANGED MAIL BOX APPARATUS

Alexander M. Cornwell, Jr., St. Louis, Mo., assignor to Jackes-Evans Manufacturing Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 664,538, Mar. 8, 1976, abandoned. This application Jul. 1, 1977, Ser. No. 812,373
Int. Cl.[2] B65D *91/00*
U.S. Cl. 232—39 **3 Claims**



1. A mail box gang comprising:

(a) a plurality of mail boxes of the type formed of inverted U-shaped casings, said casings being closed at one end and having a pivotal door at the other end and a floor closing the bottom of said casing, said floor comprising a horizontal sheet member with downward depending flanges attached to the bottom edges of said inverted U-shaped member;

(b) said boxes being ganged in at least two horizontal rows;

(c) the boxes in each row being interconnected and spaced apart by tubular spacing means interposed between each box in the area of the depending flange of said floor, and interlock means extending between each flange through said tubular spacing means to interconnect adjoining boxes one to another;

(d) said boxes being joined at the top by at least one elongated bar affixed to the tops of the boxes in each row; and

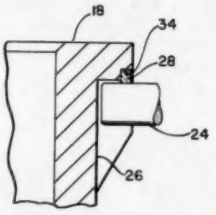
(e) the boxes of one row being vertically positioned upon the boxes of another row and interconnected by a triangular shaped bracket, the base of each bracket being positioned on the tops of the lower boxes, and the apex of said triangle being affixed to a depending flange on the lower edge of a box of the upper row.

4,148,433

FRICTION REDUCING INSERT FOR SWINGING BUCKET ROTORS

Brian J. Bayley, Palo Alto, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 29, 1977, Ser. No. 811,016
Int. Cl.[2] B04B *5/02*
U.S. Cl. 233—26 **3 Claims**



1. A centrifuge rotor comprising:

a rotor frame;

at least two pivotal containers for carrying fluid samples;

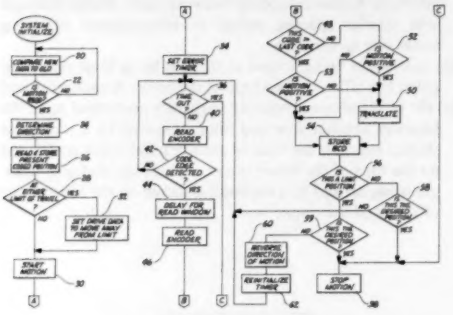
means mounted on one of said frame and said container for pivotally supporting said containers on said rotor frame, said containers pivotal between a first position and a second position; and

an insert located between each of said containers and said supporting means for reducing the friction between said container and said supporting means when said container moves between said first and second positions, said insert member being made of a material having a coefficient of friction less than the coefficient of friction of the material of said support means and said container, said insert member is sized, so that, when said rotor is at rest and said container is in said first position, said supporting means is in contact with only said insert member and wherein said insert member is elastic enough, so that, when said rotor is at operational speeds and said container is in said second position, said supporting means is in direct contact with said container and said insert member has been compressed.

4,148,434
METHOD OF PRODUCING A BINARY CODE AND MEANS FOR USING THE SAME

John L. Lorenzo, Southbury, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Dec. 5, 1977, Ser. No. 857,303
Int. Cl.[2] G06K 7/00, 7/08, 7/10, 19/06
U.S. Cl. 235—435 13 Claims



1. In a method of providing digital information in binary code upon an elongated encodable medium, the steps comprising:

(a) encoding said medium by placing on it a plurality of longitudinally spaced combinations of information bits;

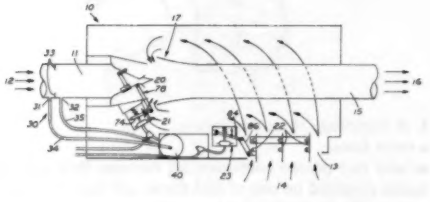
(b) displacing said medium in a decoder having means for moving said medium in both longitudinal directions; and

(c) assigning to said combinations a value dependent upon the direction of motion of said medium.

4,148,435
INDUCTION AIR MIXING BOX CONTROL

Frederick J. Meyers, Harlem Township, Winnebago County, Ill., and Marvin H. Zille, Beloit, Wis., assignors to Barber-Colman Company, Rockford, Ill.

Filed Jun. 27, 1977, Ser. No. 810,235
Int. Cl.[2] F24F 13/04
U.S. Cl. 236—13 10 Claims

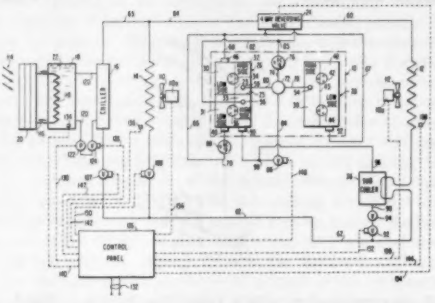


1. Apparatus for controlling the volume rates of flow of conditioned primary air above atmospheric pressure and of secondary air entering an induction air mixing box having a first inlet for receiving the primary air, a second inlet for receiving the secondary air, means for inducing flow of said secondary air into the box in response to a flow of said primary air through the box, an outlet for said primary and secondary air exiting from the box for delivery to a condition controlled space, a first damper for solely controlling the volume rate of flow of said primary air into the box, and a second damper for restricting the volume rate of flow of said secondary air into the box, said apparatus comprising a first actuator for variably positioning said first damper, means responsive to the magnitude of a sensed volume rate of flow of said primary air for controlling operation of said first actuator such that the first damper is variably positioned to maintain a predetermined substantially constant volume rate of flow of said primary air, and a second actuator independent of said first actuator for variably positioning the second damper solely as a function of a sensed magnitude of a controlled condition in said condition controlled space.

4,148,436
SOLAR AUGMENTED HEAT PUMP SYSTEM WITH AUTOMATIC STAGING RECIPROCATING COMPRESSOR

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Continuation-in-part of Ser. No. 782,675, Mar. 30, 1977, Pat. No. 4,086,072, which is a continuation-in-part of Ser. No. 653,568, Jan. 29, 1976, Pat. No. 4,058,988. This application Jun. 14, 1977, Ser. No. 806,407
Int. Cl.[2] G05D 23/00; F25B 27/02, 1/10
U.S. Cl. 237—2 B 3 Claims



1. An air source heat pump system comprising:

a first, indoor heat exchange coil,

a second, outdoor heat exchange coil,

a multi-cylinder reciprocating compressor,

conduit means carrying refrigerant, said conduit means including a reversing valve and connecting said coils and said compressor in a primary closed series loop, said reversing valve functioning to cause said indoor and outdoor coils to operate alternately as system evaporator and condenser with said reversing valve directing expanded refrigerant vapor from the coil functioning as system evaporator to the compressor and directing compressed refrigerant vapor from the compressor to the coil functioning as the system condenser,

the improvement comprising:

a third heat exchange coil,

said conduit means further including means for connecting said third heat exchange coil across said outdoor coil,

first control valve means within said conduit means for selectively controlling refrigerant flow through said primary closed loop to said second and third heat exchange coils,

solar energy heat supply means for supplying thermal energy to said third heat exchange coil,

means for sensing the temperature of the ambient air passing over said outdoor coil,

control means for operating said first control valve means in response to said temperature sensing means;

whereby, thermal energy input to said heat pump system during heating mode may be supplied selectively by said second heat exchange coil acting as an air source evaporator or said third heat exchange coil via said solar energy supply means, and wherein said reciprocating compressor comprises: a first cylinder head and a second cylinder head, said first cylinder head comprising first and second cylinders, said second cylinder head comprising third and fourth cylinders, said first cylinder head including first manifold means separating said first and second cylinders and defining low pressure and high pressure sides for respective cylinders, said second cylinder head compris-

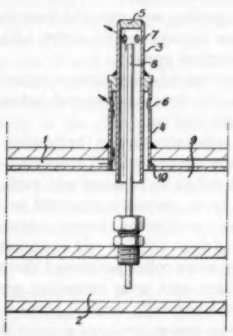
ing second manifold means defining commonly, low and high pressure sides for both cylinders, means for subcooling condensed refrigerant from said coil functioning as system condenser, prior to supplying said refrigerant to the coil functioning as the system evaporator, a subcooling vapor return line for returning vaporized refrigerant from said subcooling means to said compressor, means for connecting the coil functioning as the system evaporator to the low side of all cylinders for single stage compression of vaporized refrigerant from the system evaporator, means for connecting the high side of all cylinders to the coil functioning as the system condenser, means for connecting the subcooler vapor return line to the low side of one of said cylinders and for cutting off that cylinder low side to the coil functioning as the system evaporator when the refrigerant vapor within the subcooler return line is higher than the refrigerant vapor returning to the compressor from the coil functioning as the system evaporator, means for further connecting the high side of said one cylinder to said coil functioning as the system condenser and including means for preventing discharge from said one cylinder to flow back to the high side of said other cylinders if the pressure of that discharge is in excess of the discharge pressure at the high side of said other cylinders, and means for selectively connecting the high side of said other cylinders to the low side of said one cylinder in common with said subcooler return line such that said other cylinders function in first stage refrigerant vapor compression and said one cylinder functions as second stage compression with its discharge only going to the coil functioning as the system condenser.

4,148,437

COMBUSTOR

Michael H. Barker, Ockley, and Alan G. Roberts, Dorking, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Dec. 20, 1977, Ser. No. 862,586
Int. Cl.[2] F23D *19/00*
U.S. Cl. 239—424 **8 Claims**



1. A nozzle injection unit comprising first and second co-axial tubes, the first co-axial tube being partly surrounded by the second co-axial tube, each having an inlet for an air supply and an outlet which comprises a lateral passageway through the tube wall, the first co-axial tube projecting beyond and having its outlet beyond the outlet of the second co-axial tube characterised in that there is a third tube capable of supplying fuel oil which has its outlet within the first co-axial tube and near to the outlet of the first co-axial tube.

4,148,438

ANTI-SIPHON SPRAY HEAD

Alfred M. Moen, Grafton, Ohio, assignor to Stanadyne, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 837,428, Sep. 28, 1977, which is a continuation-in-part of Ser. No. 677,323, Apr. 15, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,235
Int. Cl.[2] B05B *1/14*; F16K *7/07*
U.S. Cl. 239—571 **10 Claims**

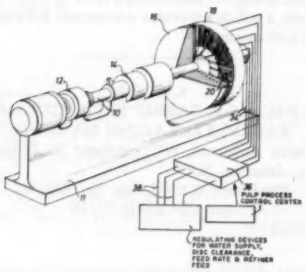
1. An anti-siphon spray head including a housing, a chamber in said housing, a plurality of spray openings in said housing in communication with said chamber, an inlet in said housing, a flexible sleeve positioned within said chamber and masking said inlet to form a seal therewith preventing the flow of water from said spray openings to said inlet, a movable valve member within said chamber for controlling the flow of water from said inlet to said spray openings, and means on said valve member in sealing contact with said flexible sleeve when said valve member is in a closed position.

4,148,439

METHOD AND DEVICE FOR CONTROLLING THE ENERGY CONSUMPTION IN A PULP REFINING SYSTEM

Mats Flodén, Täby, Sweden, assignor to Defibrator Aktiebolag, Stockholm, Sweden

Filed Jan. 26, 1977, Ser. No. 762,665
Claims priority, application Sweden, Jan. 30, 1976, 7601019
Int. Cl.[2] B02C *23/40*
U.S. Cl. 241—28 **2 Claims**



1. In the method of refining pulp in which moisture-containing fibrous raw material is introduced at an adjustable rate of feed into the central portion of an adjustable grinding space defined between a pair of grinding discs which rotate relative to one another within a closed housing and in which grinding space the material is propelled by the centrifugal force created by the rotating discs in a radial path towards the periphery of the discs while being subjected to a grinding operation in an environment of steam generated by the heat quotient of the energy input, the improvement for regulating the mechanical energy input by sensing and recording the heat quotients of the mechanical energy input along the radial path of the material

in the grinding space and coordinating the rate of feed and moisture content of the material and the width of the grinding space to the recorded heat quotients to produce a pulp in accordance with a programmed pulping process with minimized energy consumption.

4,148,440

APPARATUS FOR THE RELEASE OF THE JACKET MATERIAL OF ROD-SHAPED CARRIERS AND RECOVERY OF THE SAME, PARTICULARLY OF WASTE WELDING RODS

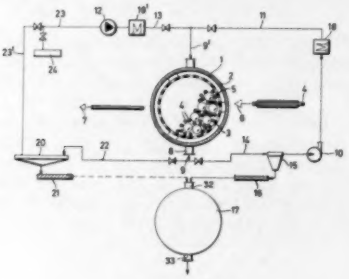
Rüdolf Eisenhauer; Helmut Haas; Friedhelm Haude, all of Cologne, and Jurgen Greifenberg, Bensberg-Refrath, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Jan. 26, 1977, Ser. No. 762,753

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1976, 2606010

Int. Cl.[2] B02C *17/02, 17/14*

U.S. Cl. 241—54 **12 Claims**



1. Apparatus for removing the jacket material from jacketed rods, comprising:

a vibratory ball mill including an outer tube, a grinding container in and spaced from said tube having a perforate wall, said container having cylindrical grinding bodies therein of the same length as the jacketed rods, at least one fluid inlet to said tube and at least one fluid outlet from said tube; and

a fluid circuit connected to said inlet and said outlet, including a fluid pump for delivering a flow of fluid through said container, a solids separator connected between said outlet and said pump.

4,148,441

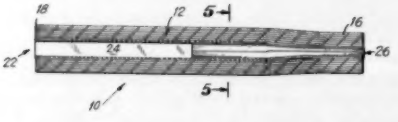
FABRIC PACKAGE, FABRIC PACKAGE CORE, AND FABRIC PACKAGING METHOD

Herbert Cohen, Anderson, S.C., assignor to Jamaica Consultants, Inc., Jamaica, N.Y.

Filed Nov. 4, 1977, Ser. No. 848,744

Int. Cl.[2] B65H *75/10*

U.S. Cl. 242—1 **17 Claims**



14. A fabric package comprising a body of fabric wound around a predetermined axis, said fabric having opposed side edge regions one of which is substantially longer than the other, and a core situated along said axis and surrounded by the body of wound fabric to support the same, said core including a tubular core portion and a finned core portion extending partly into said tubular core portion while extending axially beyond the latter, said core portions respectively terminating in free end regions which respectively support the wound fabric at said opposed side edge regions thereof, said free end regions of said core portions respectively having transverse to said axis maximum dimensions one of which is substantially greater than the other, and the core portion with said greater maximum dimension supporting the fabric at its longer side edge region while the core portion with the smaller of said maximum dimensions supports the fabric at the shorter of its side edge regions.

4,148,442

DEVICE FOR DISPENSING SHEETS OF WEB MATERIAL OF PREDETERMINED LENGTH

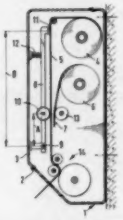
Manfred Baumann, and Walter Besserer, both of Diepoldsau, Switzerland, assignors to Apura GmbH, Mainz-Kostheim, Fed. Rep. of Germany

Filed Apr. 18, 1978, Ser. No. 897,454

Claims priority, application Switzerland, Apr. 19, 1977, 004860/77

Int. Cl.[2] A47K *10/38*

U.S. Cl. 242—55.3 **5 Claims**



1. A device for dispensing sheets of predetermined length from a roll of web material such as paper, comprising:

(a) a housing having an outlet for the web material including means for separating the web into sheets,

(b) means for rotatably mounting a first roll of the web material in the housing,

(c) means for guiding web material from that first roll along a path in the housing to said outlet, said path including a generally vertical portion,

(d) means for rotatably mounting a second roll of the web material in the housing disposed below said means for mounting the first roll,

(e) a backing roller mounted in the housing below the means for mounting the second roll to guide web material from the second roll to lie adjacent said path,

(f) a sensor lever pivotally mounted in the housing and having a sensor element thereon adapted to engage the web material from the first roll at a point in said path, and having a pressure roller positioned thereon to engage the backing roller, said lever extending generally vertically alongside the generally vertical portion of said path and

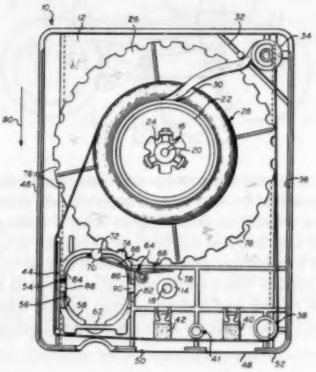
(g) resilient bias means arranged to urge the sensor lever to carry the pressure roller into engagement with the backing roller;

whereby web material from the first roll engages the sensor element to retain the lever against the action of said bias means with the pressure roller spaced from the backing roller; and when the first roll becomes empty the lever is released to pivot under the influence of said bias means to carry by means of the pressure roller the tail end of web from the first roll into frictional engagement with web from the second roll against the backing roller.

4,148,443
TAPE CARTRIDGE

James A. Lundquist, deceased, late of Lindenwold, N.J. (by Harvel Industries Corp., assignee), assignor to Harvel Industries Corp., Wheeling, Ill.

Continuation of Ser. No. 667,526, Mar. 16, 1977, abandoned.
This application Jan. 9, 1978, Ser. No. 868,186
Int. Cl.[2] G11B *23/10*
U.S. Cl. 242—55.19 A 1 Claim

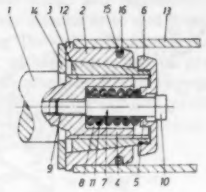


1. A tape cartridge assembly comprising a base means, reel means operatively connected to said base means and effective to rotate relative to said base means, said reel means having a plurality of openings positioned about the outer periphery thereof, brake means comprising a unitary, thin-walled, substantially flat structure having side walls, said structure resting entirely on said base means and effective when urged to slidably move as a unit reciprocally relative to said base means toward and away from said reel means in a substantially linear path, said brake means having a member projecting from the outer surface nearest the openings on said reel means and effective to engage one of said openings or fall between openings on said reel means thereby preventing further rotation thereof, spaced wall means projecting upwardly from said base means and extending in the direction of movement of said brake means and positioned adjacent said side walls of said brake means thereby to form guide means for directing the linear motion of said brake means and restrain lateral movement thereof, said brake means having an opening between said side walls and including cross piece extending between said side walls and across said opening, said base means also having an opening therethrough directly below said cross piece whereby an external force means extending through said base means opening engages said cross piece and moves said brake means out of engagement with said reel means, tab means operatively connected to said guide means and extending over said brake means in spaced superposed relation thereto and effective to restrain movement of said brake means away from said base means, said brake means including a part extending upwardly therefrom having a peripheral groove therein, and spring means resting in said groove of said brake means and effective to urge said brake means toward said reel means, said brake means being free of connection with said guide means and tab means thereby being readily removable and replaceable when worn.

4,148,444
GRIPPING CHUCK FOR SPOOLS

Reinhard Hehner, Mulheim, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 3, 1978, Ser. No. 921,533
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 2815310
Int. Cl.[2] B65H *17/02*
U.S. Cl. 242—68.2 5 Claims

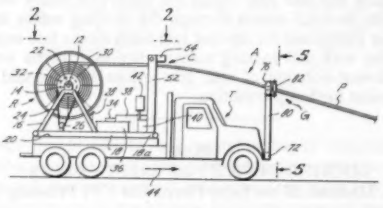


1. A chuck for use with spools comprising: a shaft; at least one inner wedge-shaped member; means mounting the inner member to one end of the shaft for axial movement and biasing same away from the shaft, gripping means comprising at least two outer members slidably mounted on the inner members to effect movement radially outwardly to thereby grip the inside of the spool; first stop means connected to the gripping means and engageable with the outer edge of the spool to limit the movement thereof with respect to the outer members and movable with respect to the inner member; and second stop means connected to the shaft for engaging with the outer members to limit their axial movement against the force of the bias.

4,148,445
APPARATUS AND METHOD FOR DISPENSING AND RETRIEVING FLEXIBLE PIPE

John L. Reynolds; Jack L. Sappington, both of Midland, and Lawrence J. Sullivan, Odessa, all of Tex., assignors to Midland Tank Rental Company, Midland, Tex.

Filed Jul. 13, 1977, Ser. No. 815,294
Int. Cl.[2] B65H *17/46*
U.S. Cl. 242—86.5 R 32 Claims



1. A method of laying and retrieving flexible pipe which is laid over terrain to connect a well drilling rig with a supply of fuel or fluid for the rig, comprising the steps of:

(a) initially laying the pipe out from the vehicle to connect the well to the supply of fuel or fluid;

(b) moving the vehicle forward during said step of initially laying;

(c) removing the pipe rearwardly from the forwardly moving vehicle;

(d) retrieving the pipe by attaching an end of the pipe to a storage reel mounted on a vehicle;

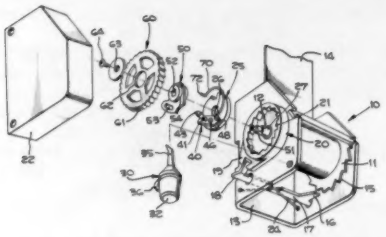
(e) moving the vehicle forwardly along the terrain over which the pipe is laid; and

(f) drawing pipe onto the reel as the vehicle is moving.

4,148,446
DUAL SENSITIVE RETRACTOR

Joseph Sugar, Los Angeles, Calif., assignor to American Safety Equipment Corporation, Encino, Calif.

Continuation-in-part of Ser. No. 576,308, May 12, 1976, abandoned. This application Dec. 8, 1976, Ser. No. 748,655
Int. Cl.[2] A60B *35/02;* B65H *75/48*
U.S. Cl. 242—107.4 A 21 Claims



1. In a dual sensitive retractor for preventing webbing protraction when the webbing undergoes a predetermined acceleration and/or the vehicle on which the retractor is mounted undergoes a predetermined change in inertia, the retractor including a reel having a shaft mounted on a frame for rotation and locking means for locking said reel against protraction, the retractor including an inertia mass mounted on the shaft for rotation with respect to the shaft, and an inertia weight responsive to changes in the inertia of the vehicle, the improvement comprising the provision of:

latch means and means for mounting said latch means for engaging said locking means to prevent webbing protraction;

interconnecting means for connecting said latch means and said inertia mass for normally concurrent rotation;

drive means driven by said shaft and connected to said latch means for imparting rotation from the shaft to said latch means and through said interconnecting means to the inertia mass and for moving said latch means into engagement with said locking means when webbing acceleration rotates the shaft faster than the inertia mass;

gear means and means mounting said gear means on the shaft for rotation with respect to the shaft, said gear means being engageable by said inertia weight to prevent its rotation with the shaft; and

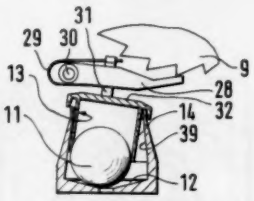
yielding means in a gear driving relation between said latch means and said gear means for imparting rotary motion from the latch means through the yielding means to the gear means and for moving said latch means into engagement with said locking means when said inertia weight prevents rotation of said gear means to lock said reel against further protraction.

4,148,447
LOCKING DEVICE FOR SAFETY BELTS

Stig M. Lindblad, 20 rue Saint-Pierre, CH-1701 Fribourg, Switzerland

Filed Oct. 13, 1977, Ser. No. 841,927
Claims priority, application Sweden, Oct. 14, 1976, 7611398
Int. Cl.[2] A62B *35/02;* B65H *75/48*
U.S. Cl. 242—107.4 A 7 Claims

1. Locking device for safety belts preferably intended for vehicles comprising a frame, a bandreel in the frame, a band on the reel to be wound up thereon, spring means for rotating the bandreel to wind up the band, ratchet wheel means in driving connection with the reel, a pawl mechanism for cooperation with the ratchet wheel means, said pawl mechanism when activated locking the ratchet wheel means to prevent the bandreel from rotating in an unwinding direction for the band, a body of inertia movable under the influence of forces of inertia from a resting position to an activated position, and transmission means including a first portion adjacent to the body of inertia having an annular form enclosing said body of inertia and displaceable by said body of inertia when the latter is moved to its activated position and a second portion adjacent to the pawl mechanism, said second portion being displaced by the displacement of the first portion for activating said pawl mechanism, a base connected to said frame having a first support, said body of inertia being carried by said first support for movement between said resting and activated positions

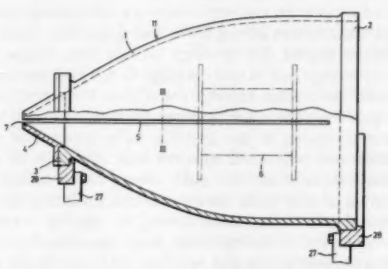


thereof, and a second support on said base, said transmission means being carried by said second support, said transmission means resting on said second support with a resting surface thereof when said body of inertia is in its resting position and being moved to a leaning position wherein it rests on an edge of its resting surface when said body of inertia is in its activated position, thus raising said second portion of said transmission means a sufficient distance to activate the pawl mechanism.

4,148,448
TREATMENT LINE FOR METAL WIRE

Kurt Weber, Chavannes, Switzerland, assignor to Maillefer S.A., Switzerland

Filed Aug. 15, 1977, Ser. No. 824,619
Claims priority, application Switzerland, Aug. 17, 1976, 10449/76
Int. Cl.[2] B65A *49/00*
U.S. Cl. 242—128 7 Claims



1. A treatment line for treatment of copper wire at a delivery speed of at least 2,000 m/min, said treatment line comprising at its upstream end:

a stationary wire supply source comprising:

a cantilevered shaft;

a copper wire carrying reel rotatably supported on said shaft; and

a loop-guard coaxial with and surrounding said shaft, said loop-guard comprising a cast part of gray or ductile cast iron surrounding said reel, said cast iron part comprising a hollow body with a finely machined and finished smooth and hardened inner surface in the shape of an ogive.

4,148,449

PHOTOGRAPHIC FILM CASSETTE INCORPORATING A FILM LOCK

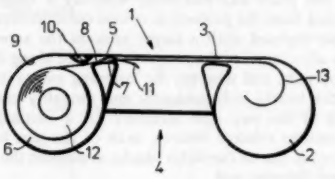
Achim Kluczynski, Immekeppel, and Erik Altmann, Muehlheim, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Apr. 3, 1978, Ser. No. 893,087

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1977, 2715554

Int. Cl.[2] G03B *1/04*

U.S. Cl. 242—71.2 7 Claims



1. A photographic film cassette comprising substantially cylindrical feed and take-up compartments connected to each other by a slot-like film passageway having two sides and an exposure station disposed between the compartments, one of its sides being substantially tangent to the compartments, the other side of the film passage having a depression which tapers inwardly and slopes upwardly in the direction of feed of the film whereby the depression can engage a similarly tapered tail on the film which is slightly smaller than the depression to prevent the film from being completely drawn into the take-up compartment.

4,148,450

MODEL AIRCRAFT CONSTRUCTION

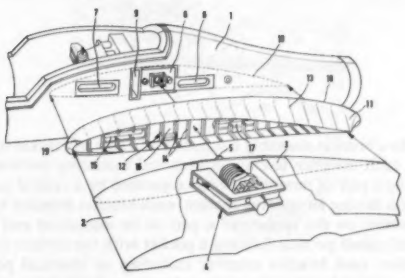
Hermann Neuhierl, Waldstrasse 36, 8510 Fürth, Bayern, Fed. Rep. of Germany

Continuation of Ser. No. 682,794, May 3, 1976, abandoned. This application Sep. 2, 1977, Ser. No. 830,316

Claims priority, application Fed. Rep. of Germany, May 6, 1975, 2520167; Mar. 18, 1976, 2611555

Int. Cl.[2] B64C *3/00;* A63H *27/02*

U.S. Cl. 244—124 14 Claims



1. A model aeroplane of the glider or motor-driven type which comprises, scaled down from the dimensions of a full size aeroplane,

a fuselage,

releasable fixing means, a pair of wings fitted laterally one on each side of the fuselage by said releasable fixing means, and

an intermediate member intermediate the end of each wing which is adjacent the fuselage and the fuselage, said intermediate member having outer surfaces with contours providing an aerodynamically smooth transition from the fuselage to the wings, said intermediate member being defined on the side thereof adjacent the wing by an end surface corresponding in size and shape to the cross-sectional form of the wing and being defined on the side thereof adjacent the fuselage by an end surface corresponding in its contours to the contours of the fuselage, said intermediate members comprising: a stiffening strut structure, a skin over said stiffening strut structure, said stiffening strut structure having struts disposed with respect to each other so that said fixing means are passable through said intermediate members from the fuselage to the wings, said wings and intermediate members being interchangeably attachable to said fuselage by said fixing means passing through said intermediate member, said wings having a shape dependent on predetermined environmental characteristics, said intermediate members having all the same shape and size on the side of the fuselage and having different cross-sections on the other side adapted to different wing sections.

4,148,451

HOOK LOCKING MEANS FOR EJECTOR RELEASE UNITS

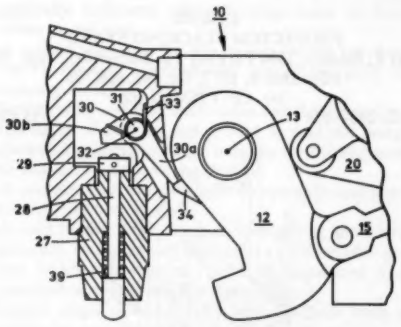
Murray A. Schorr, Milton Keynes, England, assignor to Westland Aircraft Limited, Yeovil, England

Filed Aug. 15, 1977, Ser. No. 824,695

Claims priority, application United Kingdom, Aug. 18, 1976, 34502/76

Int. Cl.[2] B64D *1/02*

U.S. Cl. 244—137 R 6 Claims

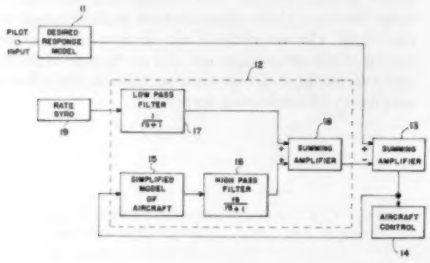


1. An ejector release unit having a pair of longitudinally spaced-apart hooks pivotally mounted for movement between a retracted position to permit loading and release of a store and an engaged position in which the hooks are arranged to engage supporting lugs provided on the store, linkage interconnecting the hooks, a spring mechanism associated with the linkage to permanently urge the hooks into their engaged positions and operating means associated with the linkage to move the hooks between their engaged and retracted positions, a spring-loaded lever associated with at least one of the hooks and arranged so that an arm of the lever automatically engages a surface on the hook when the hook is in the retracted position thereof so as to retain the hook in that position, and an axially slidable plunger having one end protruding from the unit for engagement by a surface of the store when the store is lifted into position so as to move the arm out of engagement with the hook, thereby permitting movement of the hooks into engagement with the supporting lugs on the store.

4,148,452
FILTERING TECHNIQUE BASED ON HIGH-FREQUENCY PLANT MODELING FOR HIGH-GAIN CONTROL

Frank R. Niessen, and John F. Garren, Jr., both of Newport News, Va., assignors to The United States of America as Represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 8, 1977, Ser. No. 858,762
Int. Cl.[2] G05D *1/08*
U.S. Cl. 244—195 **10 Claims**

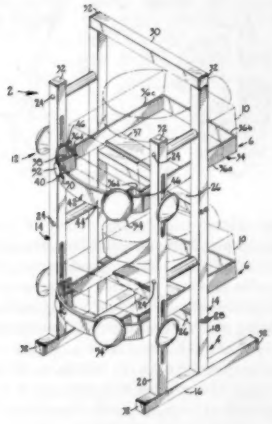


1. In an aircraft control system in which the outputs from feedback devices including a feedback rate gyro are combined with the pilot input to produce a control signal for actuating the control surfaces of the aircraft, complementary filter means receiving said control signal and the output from said feedback rate gyro for producing an estimated angular rate signal that is free of both noise and phase lag and that is combined with said pilot input to produce said control signal.

4,148,453
PROJECTOR STACKING STAND

Robert T. Brantly, 2504 Parkway Pl., Burnsville, Minn. 55337

Filed Dec. 8, 1977, Ser. No. 858,730
Int. Cl.[2] F16M *11/32*
U.S. Cl. 248—660 **15 Claims**



1. A stacking stand, suitable for adjustably supporting at least one visual image projection device in a spaced relationship relative to a screen, which comprises:

(a) a support member, wherein the support member comprises two transversely spaced side members;

(b) a support frame for carrying and supporting the projection device, wherein the support frame has two outwardly projecting pins each of which are located proximate to one of the side members;

(c) means for pivotably mounting the support frame on the support member for rotation about a single pivot point on the support member, the mounting means being configured to allow rotation of the support frame relative to a screen around at least a pitch axis and a roll axis, the pitch and roll axes being substantially perpendicular to one another; and

(d) fastening means for releaseably locking the support frame on the support member in various adjusted positions along the pitch and roll axes, whereby a visual image projected from the projection device onto the screen may be superimposed with a target area on the screen by a rotary adjustment of the projection device along the pitch and roll axes, and wherein the fastening means includes:

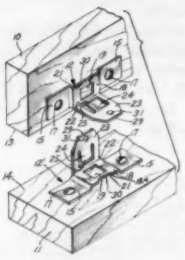
(i) slider blocks independently and movably carried on each of the two side members for a vertical sliding movement relative thereto, each of the pins being received in one of the slider blocks to support the support frame thereon; and

(ii) slider block locking members for releasably holding the slider blocks in adjusted positions along the side members, whereby the position of the support frame may be adjusted about the pitch and roll axes by adjusting the vertical position of each of the slider blocks relative to the side members.

4,148,454
BRACKET ASSEMBLY

Reuben E. Carlson, and Dagfinn O. Amdal, both of Rockford, Ill., assignors to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed May 22, 1978, Ser. No. 907,923
Int. Cl.[2] F16B *12/02*
U.S. Cl. 248—221.3 **8 Claims**

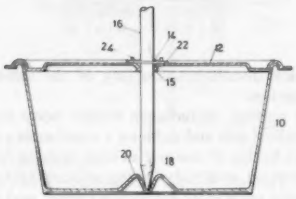


1. In a bracket assembly consisting of a pair of bracket members, each member having an identical mounting portion including a pair of mounting wings separated by a central raised portion having an opening therein, each bracket member being mountable on the surface of a part to be assembled and said central raised portion forming a pocket with the surface of the member, each bracket member including an identical planar flange integral with and positioned at an angle slightly greater than 90° relative to said central raised portion, and detent means on said flange for cooperation with the opening and the central raised portion when the flange of one bracket member is received in the pocket of the other bracket member, the improvement of detent means comprising:

a lateral projection from the plane of the planar flange adjacent the outer end of the flange, and a flexible locking member integral with the flange positioned inwardly from the lateral projection whereby the lateral projection of one bracket member provides a temporary, intermediate holding position in cooperation with the central raised portion and opening therein of the other bracket member upon initial insertion of the flange of the one bracket member into the pocket formed by the other bracket

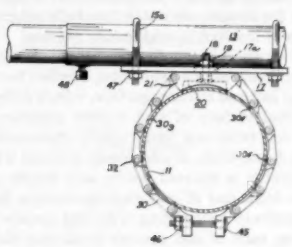
member, and the flexible locking member of the one bracket member engages with the central raised portion opening of the other member upon full engagement of the bracket members to provide a final locking position.

4,148,455
STANDS FOR TUBULAR ARTICLES
Robert J. Oliver, Adelaide, Australia, assignor to Zimm-Zamm Aktiengesellschaft, Zug, Switzerland
Filed Jul. 12, 1977, Ser. No. 814,872
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—524 **3 Claims**



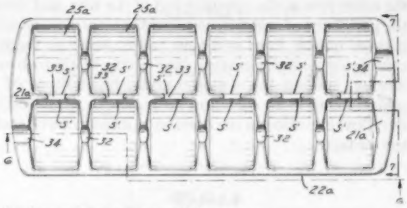
1. In combination, a rigid stand and a vertical pole, the stand comprising a container capable of holding ballast, and a lid that closes the container and that has an orifice that snugly receives the pole and that is located, when the lid is in its closed position, to be above an upwardly opening female formation in the base of the container, the formation being adapted to receive and locate the lower end of the pole, and non-circular formations on the pole that coact with complemental formations on the lid to prevent rotation of the pole in the stand.

4,148,456
ADJUSTABLE ARTICULATED POLE MOUNT ASSEMBLY
John S. Garchinsky, Aldan, Pa., assignor to Gar Design Research, Inc., Aldan, Pa.
Filed Jun. 15, 1977, Ser. No. 806,744
Int. Cl.[2] A47B *96/06*
U.S. Cl. 248—219.4 **11 Claims**



1. An assembly for mounting an object to a support comprising:
(a) a first member having a substantially flat surface adapted to be brought into contact with said object, said first member including one or more apertures to which fastening means may releasably be attached, said first member also including first and second coupling means spaced from one another,
(b) first and second pluralities of substantially identical one-piece molded links each of which has interdigitating portions which engage corresponding portions of the next-adjacent link, first ends of each of said plurality of links being respectively hingedly coupled to one of said first and second coupling means, selected ones of said links being releasably and pivotally coupled to one another by manually removable pins associated with said corresponding portions,
(c) means at the second ends of said pluralities of links for releasably coupling said second ends together, a selected number of said links having inwardly projecting portions adapted to make contact with the surface of said support when said (c) means couple said second ends together, said selected number of links also having portions adjacent said inwardly projecting portions shaped so as not to make contact with the surface of said support when said (c) means couples said first ends together.

4,148,457
ICE CUBE TRAY
Florian Gurbin, 331 Gosfield Ave., Essex, Ontario, Canada
Filed Jul. 1, 1977, Ser. No. 812,129
Int. Cl.[2] B28B *7/06*; F25C *1/24*
U.S. Cl. 249—130 **2 Claims**



1. An ice cube tray comprising
a body of material,
said body being of relatively thin generally uniform thickness throughout,
said body having a top wall with at least the central portion thereof having a flat top surface intended to be disposed generally horizontal when freezing water to form ice cubes in said tray,
said portion with said flat top surface having two laterally spaced rows of longitudinally spaced upwardly facing openings in side by side relation,
a bottom wall and side walls extending downwardly from the edges of said flat top surface around the margin of each said opening to define a cavity for holding water to be frozen into an ice cube therein,
each said side wall being inclined downwardly and inwardly toward said bottom wall,
each said bottom wall being arcuate in one direction and generally rectangular in outline as viewed in plan projection looking downwardly into the associated opening perpendicularly to said flat top surface,
the upper edges of said bottom walls and side walls being connected to said top wall at said flat top surface,
each opening being separated from the adjacent opening in the same row and the adjacent opening in the other row by a separating portion of said flat surface of said top wall,
and a depression in each of said separating portions of said top wall at the area of juncture of said top wall and each said cavity, each said depression defining an overflow passage through the associated separating portion and between associated adjacent openings with the bottom of each of said overflow passages having a maximum depth dimension measured from said flat top surface lesser than that of said bottom walls and the same as the bottom of each of the other overflow passages to thereby provide an overflow passage network in and amongst said cavities establishing a uniform overflow elevation spaced below the elevation of said flat top surface in the horizontal disposition thereof,
each bottom wall having an arcuate curvature of uniform radius with the center of curvature of each bottom wall being at or above the bottom of said depressions such that an ice cube frozen in an associated cavity is removable

therefrom by pushing downwardly the upper surface of said cube at said overflow level at either of the ends of said cube contacting the associated bottom wall to thereby depress said pushed end while imparting bodily rotation to such ice cube about the center of curvature of the bottom wall of the associated cavity, thus upending the opposite end of such ice cube to make the same finger grippable as the cube slides along said bottom wall during such bodily rotation thereof,

each said depression between the cavity of one row and the adjacent cavity of an adjacent row comprising a base wall joined to the upper edge of the associated bottom wall along a sharp edge sufficiently thin to prevent water that flows out of each cavity from accumulating or freezing at the edge so as to prevent or impede removal of the ice cubes when depressing said one end of said cubes to impart the aforesaid bodily rotation thereto,

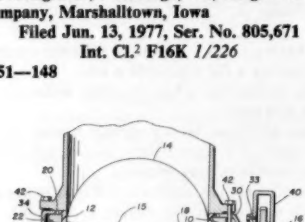
at least two additional depressions in said top wall, one extending from an endmost cavity in one row at one end of the tray and one extending from the endmost cavity in the other row at the opposite end of the tray, and through the periphery of said tray to provide at least two overflow passage outlets from said tray and to serve as finger receiving recesses for transporting a tray filled with water without spilling the water therein, the bottom of said outlets being at an elevation no higher than said uniform overflow elevation in the horizontal disposition of said flat top surface.

4,148,458

TIGHT SHUTOFF BUTTERFLY VALVE

Edward G. Holtgraver, Pittsburgh, Pa., assignor to Fisher Controls Company, Marshalltown, Iowa

Filed Jun. 13, 1977, Ser. No. 805,671
Int. Cl.[2] F16K *1/226*
U.S. Cl. 251—148 **2 Claims**



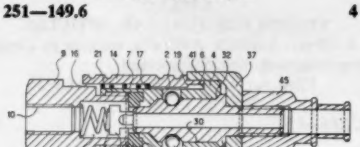
1. A butterfly valve assembly to be installed between pipeline flanges and secured by flange bolts, comprising a cylindrical body ring, formed from a section of pipe or tubing, having a cylindrical bore and a face portion at each end of said body ring; a corrosion resistant, resilient liner covering said cylindrical bore and integrally projecting radially outwardly along said face portions completely around said bore for a limited distance; a shaft extending through said body ring and liner transverse to the axis of said body ring; a disk attached to said shaft within said body ring and liner; and at least one face plate, formed from a metal thinner in the axial direction than the portion of said liner projecting over said face portions of said body ring, said face plate having an opening which circumscribes the portion of said liner extending over the faces of said body ring and said at least one face plate has a tab which extends raially outwardly from said body ring, said tab providing means for mounting an actuator on said assembled butterfly valve body; whereby, when said butterfly valve assembly is installed between said pipeline flanges, the portion of said liner projecting over said face portions of said body ring is compressed between said face portions of said body ring and said pipeline flanges to form a flange seal and said at least one face plate is isolated from said bore of said body ring.

4,148,459

QUICK DISCONNECT VALVED COUPLING

Ginez Martinez, 153 Rue Anatole, 93130 Noisy Le Sec, France

Filed Jun. 30, 1977, Ser. No. 811,885
Claims priority, application France, Oct. 4, 1976, 76 29785
Int. Cl.[2] F16L *37/28*
U.S. Cl. 251—149.6 **4 Claims**



1. A quick disconnect coupling of the self-locking type which comprises:

a female portion, including a hollow body having a main longitudinal axis and defining a transversing stepped fluid passage having at one end an inlet opening for receiving a male portion, said body having adjacent said inlet opening a radially outwardly extending flange, said body having radial recesses for receiving a plurality of retaining balls;

a sliding cylindrical ring surrounding said body for selectively locking said balls within said recesses, said ring having an annular front end and being urged by a spring means, said ring being longitudinally movable between a first position against said spring means where it allows said balls to be radially outwardly displaced in said recess and a second position where, under the biasing force of said spring means, an inner portion of said annular front end comes into abutting contact with said radially outwardly extending flange of said body, so as to lock said balls against radial outward displacement in said recesses;

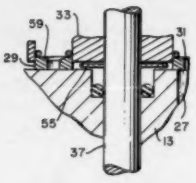
a male portion comprising a hollow member having an outer surface, said hollow member defining a longitudinally extending fluid passage, said outer surface of said hollow member defining, successively, a straight cylindrical front end, a radially outwardly extending diverging ramp surface, and straight cylindrical surface having substantially the same diameter as said inlet opening in said body of said female portion, a V-shaped groove being formed in said cylindrical surface at a portion thereof adjacent said ramp surface for cooperation with said balls when said hollow member is inserted in said female portion;

said male portion being further provided with a pushing element comprising a cylindrical member having an annular front end and an inner surface, which defines, with said cylindrical surface of said hollow member, an annular recess for receiving said radially outwardly extending flange of said body of said female portion when said hollow member is inserted within said female portion, said annular front end of said pushing element being adapted for selectively cooperating with said annular front end of said ring, each of said annular front ends being provided with angularly spaced recesses, so that recesses in one of said front ends may complementarily receive the cylindrical front end portions between said recesses in the other said front end, and vice-versa,

whereby, when inserting said hollow member in said body of said female portion, said recesses in said front ends being not in complementary angular position, said pushing element pushes said ring against said biasing force of said spring means towards its said first position, thus allowing said balls to expand radially through contact engagement with said ramp surface and said hollow member to come into abutment against a stop surface formed in said body, after which, by causing a relative rotation of said pushing member or said ring to bring said annular front ends in complementary angular position, said ring, under said biasing force of said spring means, comes in its said second

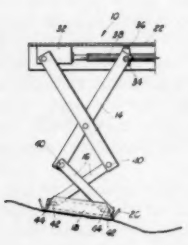
position for locking said retaining balls protruding inwardly in said V-shaped groove of said hollow member.

4,148,460
MULTI-PORT VALVE
James W. Kinsler, 3111 Middlebury, Birmingham, Mich. 48010
Filed Mar. 17, 1977, Ser. No. 778,375
Int. Cl.[2] F16K *3/32*
U.S. Cl. 251—206 **5 Claims**



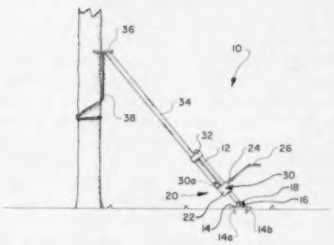
1. A valve comprising:
a cylindrical chamber having a fluid inlet passage and a fluid outlet passage, said outlet passage being in an end wall of and displaced from the axis of said chamber;
a cylindrical member disposed in said chamber for rotation about the axis of said chamber, said member having a plurality of sockets extending therethrough, said sockets being angularly displaced along a circular path equally displaced as said outlet passage from said axis;
a plurality of jets, one disposed in each of said sockets and against said end wall of said chamber for rotation with said member into and out of alignment with said outlet passage, each of said jets having an orifice therethrough of area less than the area of said outlet passage whereby fluid flow through said outlet passage may be restricted; and
means for spacing said member from the chamber wall containing said outlet passage, whereby fluid flow through said outlet passage continues when none of said orifices is aligned with said outlet passage.

4,148,461
SELF-ALIGNING SCISSOR TYPE JACK
Joseph P. Orth, 150 S. Washington, Wichita, Kans. 67202
Filed Aug. 8, 1978, Ser. No. 931,991
Int. Cl.[2] B66F *3/22*
U.S. Cl. 254—86 R **9 Claims**



1. A self-aligning scissor type jack for leveling a vehicle on a ground surface, the jack comprising:
a base adapted for mounting underneath the frame of the vehicle;
a pair of pinned scissor arms, said arms crossed and pinned together intermediate an upper end portion and a lower end portion of said arms, the upper end portion of said arms pivotally attached to said base;
a pair of floating scissor links, said links crossed and having and upper end portion and a lower end portion, the upper end portion of said links pivotally attached to the lower end portion of said arms;
a load distribution foot, the ends of said foot including elongated slots therein, the lower end portion of said links slidably attached to the slotted ends of said foot, said load distribution foot contacting the ground surface when the jack is lowered and adjusting said links to the contour of the ground surface for distributing the load thereon and distributing the load to said arms; and
drive means mounted on said base and attached to the upper end portion of said arms, said drive means when activated moving the linear distance between the upper end portion of said arms thereby raising and lowering the jack on the vehicle.

4,148,462
TREE FELLING DEVICE
Samuel A. Jessup, 1613 Pinedale Dr., Raleigh, N.C. 27603
Filed Jun. 21, 1978, Ser. No. 917,461
Int. Cl.[2] B66F *3/24*
U.S. Cl. 254—133 R **5 Claims**

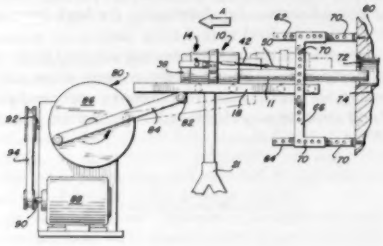


1. A tree felling device comprising: a ratchet type jacking assembly including an elongated rack; a jacking mechanism operatively engaged with said rack and movable vertically about said rack and including a ratchet advancing assembly having a handle extending therefrom for actuating the same such that said jacking mechanism can be moved up and down said rack; a support plate pivotably secured to said rack by a pivot pin that allows said rack to extend from said support plate at various angles; said jacking mechanism including an outwardly projecting heel and an anchoring stud secured thereto and projecting upwardly therefrom, said anchoring stud including two spaced apart legs adapted to straddle said heel and secured thereto by attaching means operatively interconnected between said legs and said heel; a support clip secured to the top portion of said rack and generally aligned with said heel and anchoring stud, and including an opening formed therein adjacent said racks; an elongated pipe like pusher having one end with a stud receiving opening therein for receiving said anchoring stud; and wherein said support clip is adapted to receive and hold said pusher through the defined opening thereof such that said elongated pusher may be supported about said heel and confined adjacent said rack by said anchoring stud and allowed to project upwardly therefrom through said support clip; a tree engaging head secured to the end of said pusher opposite said stud receiving opening and including an arcuate shaped tree engaging face; and a flexible tie normally attached to said tree engaging head and tied around a tree being engaged to generally prevent the head from slipping along the tree as falling pressure is applied by said jacking assembly.

4,148,463
URGING APPARATUS FOR ELONGATED ARTICLES

John P. Schrum, Box 42, Schneider, Ind. 46376

Filed Aug. 10, 1977, Ser. No. 823,434
Int. Cl.[2] E21C 29/16
U.S. Cl. 254—134.3 FT 7 Claims

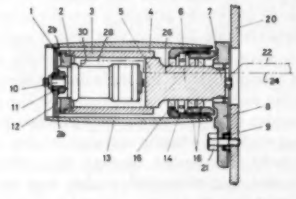


1. Apparatus for moving an elongate flexible article through an elongate recumbent enclosure having open ends, said apparatus comprising: mounting means fixed relative to an open end of said enclosure; housing means carried on said mounting means and movable relative thereto toward and away from said open end; releasable article gripping means carried by said housing means and engaging said article; article support means carried by said housing means and having an elongated portion thereof, shaped and dimensioned for entry into said open end and extension into said enclosure, disposed beneath said gripping means to support said gripping means and an article gripped thereby; and reciprocating means connected to said housing means for causing said housing means, said gripping means and said article support means to move toward and away from said open end, whereby said article support means and gripping means reciprocate in axial alignment with said enclosure and relative to said open end, said gripping means being adapted to engage said article to cause said article to move with said housing means in one direction, while releasing said article to permit movement of said housing means, said gripping means and said support means relative to said article in the other direction.

4,148,464
FASTENING FOR A HYDRAULIC MOTOR

Ernst Fog, Glostrup, and Carl J. Jepsen, Albertslund, both of Denmark, assignors to Nordiske Kabel- og Traadfabriker A/S, Copenhagen, Denmark

Filed Nov. 29, 1976, Ser. No. 745,670
Int. Cl.[2] B66D 1/00
U.S. Cl. 254—150 FH 4 Claims

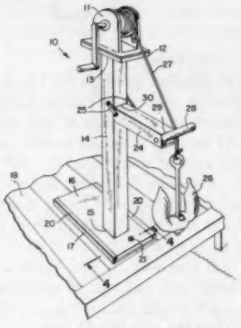


1. Fastening means for securing a motor drum assembly to a support structure, the motor drum assembly comprising a hydraulic motor with a projected rotary drive shaft and a rotatable drum enclosing said motor, the axes of the drum and motor being coaxial; said motor drive shaft extending away from the support structure; said fastening means comprising a combination rigid assembly of coaxial tubular means and rod means with said rod means projecting from one end of said tubular means, said motor being non-rotatably secured inside of said tubular means with its drive shaft coaxial with said rod means and projecting from said tubular means in the opposite direction from the rod means; means non-rotatably securing said drive shaft to one end of said rotatable drum; said drum encompassing said tubular means; means rotatably jounalling said drum on said rod means; a terminal portion of said rod means projecting from the other end of said rotatable drum; and a flange member rigidly secured to said rod means at the other end of said rotatable drum and adapted to be rigidly secured to the support structure; said fastening means including means enabling fluid communication to said motor to supply drive power to said motor.

4,148,465
PORTABLE WINCH STAND

Donald W. Bowman, 4216 Cuthbertson, Flint, Mich. 48507

Filed Aug. 29, 1977, Ser. No. 828,346
Int. Cl.[2] B66D 1/72
U.S. Cl. 254—186 HC 1 Claim



1. A portable winch stand combination comprising:
a winch having a flat plate winch base,
a stanchion having a required length, said stanchion permanently secured normally to said winch base at a first stanchion terminus,
a stanchion base plate permanently secured normally to said stanchion at a stanchion second terminus,
a stanchion arm pivotedly hinged at a first stanchion arm terminus adjacent to said stanchion at a selected distance below said winch base, said stanchion arm adapted to abutt said stanchion at said first stanchion arm terminus, on extension of said arm,
an anchor rope guide means secured at the second stanchion arm terminus, providing a guide means for an anchor rope, and,
a permanent base plate, adapted for securing to a boating facility, said permanent base plate and said stanchion base plate adapted to slidably dovetail together and index and secure together, utilizing an index pin indexed into coadjacent apertures in said stanchion base plate and said permanent base plate,
whereby, said portable winch stand can be mounted and secured on said permanent base plate and operatively engaged to weigh an anchor on the extended stanchion arm and anchor rope guide, and
whereby said stanchion arm can be folded upwardly against said stanchion on storage of said winch stand, minimizing protuberances and storage volume of said winch stand.

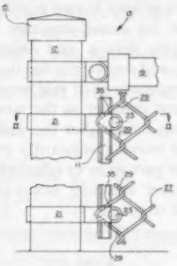
4,148,466
TENSION BAR FOR FENCE CONSTRUCTION

Rollin V. Wilson, 4206 Longleaf, Memphis, Tenn. 38117

Filed Feb. 8, 1978, Ser. No. 876,069
Int. Cl.[2] E04H 17/10
U.S. Cl. 256—47 3 Claims

1. An elongated tension bar for use with a fence of the type including a fence fabric having terminal links and having nu-

merous aligned open loops which are established by the terminal links and including certain fastening structure employed in constructing the fence, for being inserted through the open loops during construction of the fence, and for maintaining tension on the fence fabric, said tension bar comprising in transverse cross section a major axis and a minor axis with said minor axis being substantially equal in dimension to the distance between parallel spaced apart portion of the open loops and said major axis exceeding the distance between these parallel spaced apart portions by a significant amount for assuring



that said tension bar unyieldably maintains optimum orientation with respect to the direction of the tensional forces acting thereon as a result of tension being applied to the fence fabric, said cross section of said tension bar including a base member for restingly engaging the certain fastening structure employed in constructing the fence, said base member including a pair of remotely disposed loop engaging portions having a predetermined distance therebetween for engagement with respective opposite portions of the aligned open loops of the fence fabric.

4,148,467

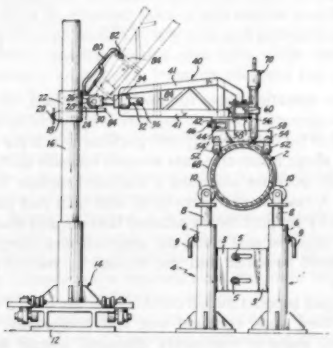
PIPE CUTTING AND WELDING APPARATUS

Eugene F. Sargeant, Box 367, Rogers, Ark. 72756

Filed Dec. 12, 1977, Ser. No. 859,480

Int. Cl.[2] B23K *7/04*

U.S. Cl. 266—57 **9 Claims**



1. In apparatus for performing cutting or welding operations on pipe and having means for supporting a length of pipe for rotation about its longitudinal axis, a control template carried by and surrounding the pipe and a pattern follower arranged to control movement of a tool relative to the pipe, the improvement comprising:

a frame having guide means guidingly supporting an elongated member for longitudinal movement parallel to and above the axis of a pipe and having a pattern follower and tool fixed thereon;

roller means on said frame arranged to rest on the upper surface of a pipe and hold said frame and elongated member a constant distance from the surface of said pipe as the latter rotates; and

said frame being connected to a stationary support member by support means providing for swinging movement of said frame about three mutually perpendicular axes, a first one of which is vertical and a second one of which is substantially parallel to the axis of said pipe.

4,148,468

LANCE FOR THE FLUSH GAS TREATMENT OF NON-FERROUS MOLTEN METALS

Guntram Körber, Dusseldorf, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 24, 1978, Ser. No. 881,127

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 2709155

Int. Cl.[2] C21C *7/00*

U.S. Cl. 266—225 **3 Claims**

1. In a lance for the flushing gas treatment of non-ferrous molten metals, consisting of a steel tube with a connection for the flushing gas for being dipped into the molten metals, the improvement being a lance head made of gas permeable sintered metal being welded onto said steel tube for injecting finely subdivided gas therethrough, and said steel tube and said lance head being coated with a ceramic protective coating without any lining of fire brick or the like to render said lance corrosion resistant against the molten metals and lightweight for manual handling thereof.

4,148,469

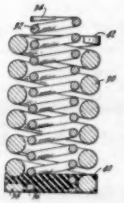
DUAL RATE SPRING WITH ELASTIC SPRING COUPLING

Robert P. Geyer, Palatine, Ill., assignor to Standard Car Truck Company, Chicago, Ill.

Filed Jan. 23, 1978, Ser. No. 871,449

Int. Cl.[2] F16F *1/12*

U.S. Cl. 267—4 **5 Claims**



4. A spring unit for use between car truck load carrying members including multiple nested coaxial springs, only one of

said springs being trapped between the load carrying members in lightly loaded or unloaded car conditions, the spring coils supported on a load carrying member being yieldingly bonded together with an elastomeric material.

4,148,470

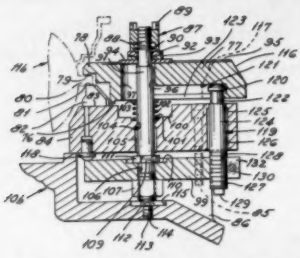
WORKPIECE PALLET WITH DISTORTION FREE CLAMPING MEANS

Kenneth O. Kolnes, and Wynsel J. Johnson, both of Rockford, Ill., assignors to Greenlee Bros. & Co., Rockford, Ill.

Division of Ser. No. 652,257, Jan. 26, 1976, abandoned. This application Sep. 12, 1977, Ser. No. 832,764

Int. Cl.[2] B25B *1/04*

U.S. Cl. 269—101 **1 Claim**



1. In a clamping means for clamping workpieces on a pallet for use in a transfer machine, the combination comprising:

(a) an elongated support bar;

(b) means for attaching said support bar to a pallet;

(c) an elongated clamp bar having a clamp nose on one end thereof for engagement with a workpiece on the pallet to clamp the workpiece to the pallet; said elongated clamp bar is provided with a longitudinally extended recess on the lower side thereof and toward said other end thereof;

(d) fulcrum means supported by said support bar and engaged with the other end of said elongated clamp bar; said fulcrum means comprises:

(1) a clamp screw having a central body portion slidably mounted in a bore formed through the pallet;

(2) a head portion on the upper end thereof slidably mounted in said longitudinal recess in the lower side of said elongated support bar; and

(3) a lower end adjustably mounted in the outer end of the elongated support bar;

(e) the outer end of the support bar is bifurcated and includes means for forcing the parts of said bifurcated end together to retain the fulcrum clamp screw in fixed position in the support bar.

4,148,471

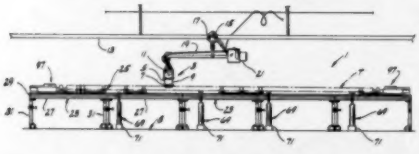
APPARATUS FOR FABRICATING WOOD STRUCTURES

James O. Werner, Ballwin, Mo., assignor to Hydro-Air Engineering, Inc., St. Louis, Mo.

Filed Jan. 21, 1977, Ser. No. 761,612

Int. Cl.[2] B23Q *3/00*

U.S. Cl. 269—321 F **6 Claims**



1. In apparatus for fabricating wood structures, such as wood trusses, wall panels or the like, from wood members secured together by nailing plates, said apparatus having means for supporting the wood members in position for being secured together by said nailing plates, wherein the improvement comprises; a plurality of stops for securely holding the wood members in position prior to and while being secured together by nailing plates driven thereinto, each of said stops comprising a stop base adapted for adjustment to different positions on the supporting means, an abutment member having a face engageable by a wood member, said abutment member being mounted on said stop base for movement of its said face upwardly from a lowered stop position in which said abutment member prevents horizontal outward movement of said wood member by engagement of said wood member with said face and for movement of its said face at least in part outwardly from said wood member to release the wood structure for removal thereof from said supporting means, said abutment member being movable upwardly and outwardly for the release of the wood structure by the engagement of said wood member with said face of the abutment member as the wood structure is lifted from said supporting means after the nailing plates are driven thereinto, said face moving outwardly away from said wood structure at least in part so as to release the pressure between the abutment member and said wood structure to facilitate lifting of the wood structure.

4,148,472

OPERATING TABLE FOR MEDICAL PURPOSES

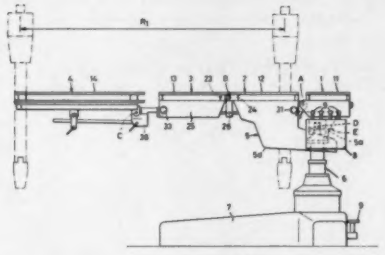
Arnold Rais, Basel, and Andrë Lüssi, Ostermundigen, both of Switzerland, assignors to M. Schaerer A.G., Wabern, Switzerland

Filed Sep. 2, 1977, Ser. No. 830,042

Claims priority, application Switzerland, May 27, 1977, 6596/77

Int. Cl.[2] F61G *13/00*

U.S. Cl. 269—325 **5 Claims**



1. In an operating table for medical purposes, of the type wherein a supporting column supports a body-rest divided into a plurality of successive body-rest portions which are mutually pivotable about transverse axes situated beneath said portions, each of said portions including a body-rest surface formed by a plate of X-ray-permeable material, and each said plate being supported by support means secured beneath and spaced from the outer edges of said plate, the improvement comprising:

a combined back-rest and seat formed by two of said portions,

a U-shaped support means combination associated with said combined back rest and seat and comprising first and second pairs of oppositely disposed spaced side parts pivotable with respect to one another about one of said transverse axes situated approximately halfway along said combined back-rest and seat, said U-shaped support means defining an open X-ray permeable area

adjusting means disposed on inner sides of said first and second pairs of side parts for angularly adjusting said side parts relative to each other about said one of said transverse axes,

a head forming part of said supporting column, and

a projecting saddle-piece mounted for pivotal adjustment on said head and rigidly connecting one of said pairs of side

parts at an end remote from said one of said transverse axes to form said U-shaped support means, the axis of said support column being offset from the U-shaped support means and extending outside of said open X-ray permeable area so that the U-shaped support means provides unobstructed radiographic capabilities for the combined back-rest and seat.

4,148,473

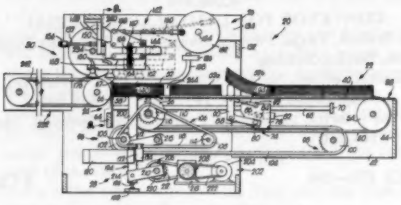
APPARATUS FOR HANDLING STACKS OF FLAT ARTICLES SUCH AS BAG-FORMING TUBES AND FOR SEPARATING AND DELIVERING THE SAME INDIVIDUALLY

Harold K. Johnson, Rte. 3, Box 26, Junction City, Kans. 66441

Filed Mar. 30, 1977, Ser. No. 782,883

Int. Cl.[2] B65H *3/08, 1/18, 3/54*

U.S. Cl. 271—20 **17 Claims**



1. Apparatus for individually and sequentially shifting flat tubes or the like from a stack thereof at a pickup station, comprising:

structure presenting a pair of elongated, spaced, tube-engaging surfaces above said pickup station; and

means for individually picking up said tubes from said stack and shifting the tubes from the pickup station, including

at least one tube-gripping element located above said station; and

mechanism operatively coupled to said element for selectively lowering the latter between said surfaces for gripping of the topmost tube of said stack at the central area of the tube, for raising the element and gripped tube together in order to cause the latter to engage said surfaces on opposite sides of said central area for creating a bowed section in said tube and preventing sagging thereof, and for shifting said tube while maintaining operative engagement between said tube and surfaces,

said mechanism comprising

an elongated slide bar;

a member slidably mounted on said bar for back and forth movement thereon,

linkage means pivotally connected to said slidable member and element-supporting means;

drive means including a drive wheel rotatable about a generally horizontal axis which is transverse to the longitudinal axis of said bar, and a rigid drive arm pivotally secured at the opposed ends thereof to said linkage means and to said driving wheel,

said linkage means including structure for, in response to rotation of said drive wheel, sequentially lowering said tube-supporting means and tube-gripping element to allow the latter to grip said topmost tube, for raising the tube-supporting means, tube gripping element and gripped tube, and for shifting said slidable member, tube-gripping means and gripped tube along the length of said slide bar; and

motion limiting means including an elongated rod element extending generally along the length of said slide bar and having one end thereof secured to said slidable member, the opposite end of said rod element being adapted for contacting stationary structure for limiting the travel of said slidable member, there being means for adjusting the effective length of said rod element.

10. Apparatus for selectively elevating a stack of articles from an initial level as articles are removed from the stack for maintaining the topmost article at a desired pickup level, said apparatus comprising:

structure defining a pickup station for supporting said stack of articles and which is shiftable in an upward direction from said initial level and shiftable downwardly back to said initial level;

selectively actuatable drive means operatively coupled to said station-defining structure for selective elevation of the latter, said drive means including

a first, normally engaged, force-transmitting clutch element having an output drive member operably coupled thereto;

means operatively coupled to said first clutch element for preventing downward movement of said stationdefining structure when the first element is engaged, said movement-preventing means including linkage means having mechanism pivotally connected to said station-defining structure and coupled with said output drive member;

a drive assembly including motor means coupled to said first clutch element;

means for commencing the operation of said drive assembly in response to removal of at least one of said articles from said stack for elevating the station-defining structure, and for stopping the operation of said drive assembly to stop the elevation of said stack when the topmost article thereof reaches said pickup level, and

said pivotally connected mechanism serving to transmit force from said drive assembly during operation of the latter to upwardly shift said station structure, and to allow said station-defining structure to shift downwardly when said first clutch element is disengaged;

means for disengaging said first clutch element in response to a removal of all of the articles of said stack for allowing said station-defining structure to descend to said initial level.

4,148,474

APPARATUS FOR SEPARATING SINGLE SHEETS FROM A STACK THEREOF

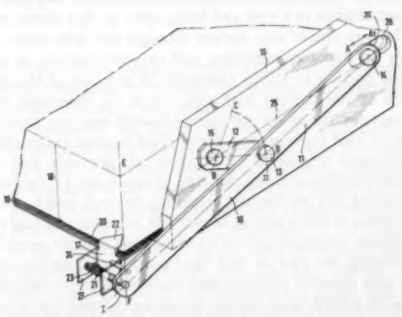
Günter Back, Hofheim-Diedenbergen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 23, 1977, Ser. No. 835,882

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1976, 2643388

Int. Cl.[2] B65H *3/54*

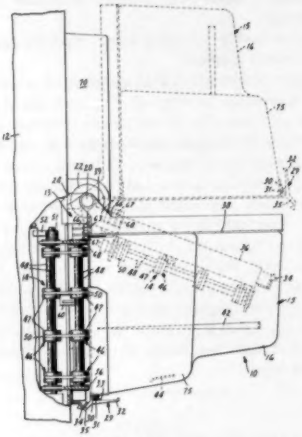
U.S. Cl. 271—170 **9 Claims**



1. Apparatus for the selective removal of an ultimate sheet of a flexible material from a stack thereof, comprising:

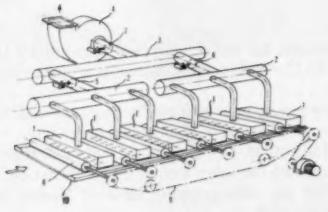
(a) support means, including a side wall, for supporting a stack of sheets of a flexible material;
(b) restraining means for applying a longitudinal restraining force on said stack at one transverse edge thereof;
(c) a pivotal lever disposed adjacent the longitudinal periphery of said stack for displacing said restraining means along a line normal to the upper surface of said stack, said lever having a first movable swivel point; and,
(d) means comprising a radial arm pivotally mounted at its first end on said side wall and pivotally fixed at its second end to said lever intermediate the length thereof, for swivelling said lever about said first swivel point.

4,148,475
SHEET SORTING DEVICE
Leo J. Schulz, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 12, 1977, Ser. No. 824,251
Int. Cl.[2] B65H *31/24, 31/22*
U.S. Cl. 271—173 **4 Claims**



4. A device adapted for use with a machine including means for serially ejecting sheets to distribute the sheets in a predetermined manner, said device comprising:
a fixed portion adapted to be attached to a said machine adjacent its means for ejecting;
means on the fixed portion for receiving a sheet ejected by said means for ejecting and for directing the sheet along a predetermined path;
a receiver portion comprising a plurality of spaced shelves each having an inlet end with the inlet ends of said shelves being aligned in a row and being open so that sheets may enter any one of said shelves through said inlet ends;
means for movably mounting said receiver portion on said fixed portion to afford alignment of any one of the inlet ends of the shelves with said means for directing, said means for mounting comprising spaced bearings fixed on one of said portions and a rod fixed against longitudinal movement relative to the other of said portions, said rod being positioned along one side of said receiver, having a threaded end portion and extending through said bearings to afford relative sliding movement between said rod and bearings longitudinally of said rod; and a latch assembly including one part on said fixed portion and another part on said receiver portion, said parts being relatively slidable to afford, with sliding movement of said rod in said bearings, movement of said shelves relative to said fixed portion, and being releasable to allow said receiver portion to be pivoted away from said fixed portion around said rod, and thereby providing access to the area therebetween; and
means for moving said receiver portion in a predetermined pattern with respect to said means for directing to distribute sheets in said receiver portion, comprising a nut threadably engaged with the threaded end portion of said rod, said nut being mounted for rotation and fixed against axial movement relative to said bearings, and means for causing relative rotational movement between said nut and rod to cause relative motion between said nut and rod and thereby move said receiver portion along said fixed portion.

4,148,476
CONVEYOR FOR LAMELLAR MATERIAL
Helge Brekell, Vaxjo, Sweden, assignor to AB Svenska Flaktfabriken, Nacka, Sweden
Continuation of Ser. No. 682,378, May 3, 1976, abandoned. This application Dec. 29, 1977, Ser. No. 865,496
Claims priority, application Fed. Rep. of Germany, May 6, 1975, 7514476[U]
Int. Cl.[2] B65H *29/24*
U.S. Cl. 271—194 **8 Claims**

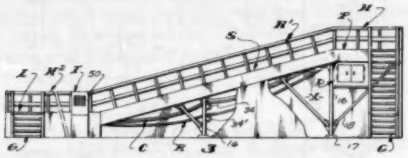


1. In a conveyor system for a train of fragile slabs of lamellar material requiring drying, comprising a slab sorting section, a slab distributing section, a slab drying section, and a slab removal section, in that order, the improvement wherein:
said slab sorting section comprises first suction-box means positioned above and adjacent the upper face of each successive slab in said train for supporting it from above, means acting on the upper surfaces of said slabs to move them onward to said distributing section, and means for controlledly reducing the suction applied to said slab by said first suction-box means to a level for which said slab will fall from said train when it is desired to remove it from said train;
said slab distributing section comprises second suction-box means positioned above and adjacent the upper face of said each slab for supporting it from above, means for controlledly reducing the suction applied to said each slab by said second suction-box means to a level for which said each slab is released by said second suction-box means, a distributing table beneath said slabs, means for providing relative lateral motion between said table and said suction-box means to receive said slabs at different lateral positions thereon when said slabs are released by said second suction-box means, first blower-box means acting upwardly through said table to support and cushion said slabs received by said table, and means for urging said received slabs into said drying section; and
said drying section comprises second blower-box means acting upwardly from beneath said slabs to support them on air from said second blower-box means, and means for moving said dried slabs from said drying section to said removal section.

4,148,477
SIMULATED SKI SLOPE SLIDE STRUCTURE

Ralph Larson, 9 Port of Spain Rd., Coronado Keys, Calif. 92118

Filed Jan. 10, 1978, Ser. No. 868,270
Int. Cl.[2] A63G 21/14
U.S. Cl. 272—56.5 SS 10 Claims



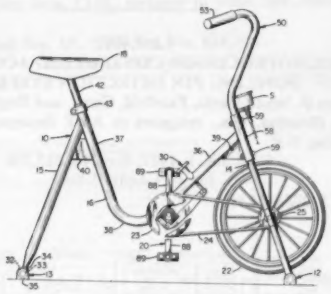
1. A simulated ski slope slide structure comprising:
an elongate forwardly and downwardly inclined deck with top and bottom surfaces, front and rear ends and opposed sides;
an elongate endless carrier belt with inner and outer surfaces and including a longitudinally extending upper portion above the deck with its inner surface in sliding supported engagement therewith, a longitudinally extending lower portion freely below the deck and front and rear recurvant end portions extending between related ends of said upper and lower portions and about the front and rear ends of the deck;
primary roller means adjacent the front and rear ends of the deck and engaging the carrier belt;
means rotatably driving the roller means whereby the carrier belt is moved about the deck with said upper portion thereof moving rearwardly and upwardly across the deck;
a bed of flaked ice on and carried by the carrier belt at the outer surface thereof and presenting a substantially upwardly disposed skiing surface at the upper portion of the belt;
an elongate endless retaining belt with inside and outside surfaces and including a top portion extending longitudinally below the lower portion of the carrier belt with its outer surface in supporting and driving engagement with the bed of ice on the lower portion of the carrier belt, whereby said bed of ice is held engaged on the carrier belt, a bottom portion extending longitudinally below said top portion and front and rear turned end portions between and joining the top and bottom portions; and
second roller means supporting the carrier belt for free movement of that belt with the carrier belt.

4,148,478
EXERCISER APPARATUS

John G. Moyski, Denver, and Horst W. Mueller, Erie, both of Colo., assignors to Chaparral Industries, Incorporated, Denver, Colo.

Filed Jan. 14, 1977, Ser. No. 759,355
Int. Cl.[2] A63B 69/16
U.S. Cl. 272—73 13 Claims

1. In an exerciser apparatus wherein a stand includes front and rear base support members and a frame suspended between said base support members having a lower closed end portion and forwardly and rearwardly divergent legs inclining upwardly in opposite directions away from said lower closed end portion for connection to said front and rear base support members, respectively, the combination therewith comprising:
a pedal crank assembly including a bearing housing and a crankshaft journaled in said bearing housing adjacent to the lower closed end of said frame, a rotatable wheel member disposed on said front base support member, and a rear seat portion mounted on said rearwardly divergent leg of said frame,
drive means for imparting the rotation of said pedal crank assembly to said front wheel,
an adjustable tension control assembly associated with said pedal crank assembly including a brake pad frictionally engaging said crankshaft, a lever arm member pivotally supporting said brake pad for frictional engagement with said crankshaft through a recess in said bearing housing, a pivotal support member pivotally securing one end of said lever arm member to said frame adjacent to one side of said bearing housing, said lever arm member extending from said pivotal support member across said bearing housing and along one of said forwardly and rearwardly divergent legs in substantially parallel relation thereto and terminating in a free end adjacent to said one of said forwardly and rearwardly divergent legs, the distance between said free end of said lever arm member and said

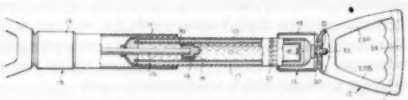


bearing housing being greater than the distance between said bearing housing and said pivotal support member, and
tension adjustment means extending through said one of said forwardly and rearwardly divergent legs and connected to said free end of said lever arm member at a point spaced above said bearing housing, said tension adjustment means including manual adjustment means to permit the operator of said exerciser apparatus to adjustably control the movement of said free end of said lever arm toward and away from said one of said forwardly and rearwardly divergent legs to adjustably control the frictional resistance of said brake pad to rotation of said crankshaft.

4,148,479
HYDRAULIC FORCE RESISTER

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Jun. 24, 1977, Ser. No. 809,774
Int. Cl.[2] A63B 21/00
U.S. Cl. 272—130 6 Claims



1. A push-pull isokinetic exerciser affording substantially uniform resistance to motion throughout its expansion and compression strokes, said exerciser comprising:
A. a hydraulic bar formed by inner and outer telescoping cylindrical tubes having handle-ends, each provided with an axially-projecting bolt, said tubes being rotatable relative to each other, said inner tube being sealed at both ends to define an oil-filled chamber, said inner tube enclosing a piston whose actuating rod is attached to the handle-end of the outer tube so that as the tubes are brought together, the piston shifts axially to vary the ratio between the left and right sections of the chamber on either side of the piston, said piston having valves therein functioning alternatively to allow oil to pass from the right to the left section when the tubes are brought together in the compression stroke and to allow oil to pass from the left to the

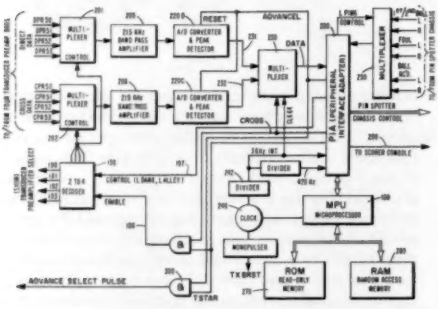
right section when the tubes are pulled apart in the expansion stroke; and

B. handle pieces attached to the handle-ends of the inner and outer tubes, each piece being constituted by a cylinder cap which concentrically covers and protects the end of the tube to which it is attached, a U-shaped yoke secured to the base of the cap and having arms projecting therefrom and a handle bridging these arms, the cap, yoke and handle of each handle-piece being integral with each other and being formed to synthetic plastic material, each cap base having a nut embedded therein to threadably receive the bolt projecting from the handle end of the associated tube to provide a connected and safe attachment therefor.

4,148,480
MICROPROCESSOR CONTROLLED ACOUSTIC BOWLING PIN DETECTION SYSTEM

William R. Smith-Vaniz, Fairfield, Conn., and Reginald A. Kaenel, Houston, Tex., assignors to AMF Incorporated, White Plains, N.Y.

Filed Jul. 1, 1977, Ser. No. 812,358
Int. Cl.[2] A63D *5/04*
U.S. Cl. 273—54 E **4 Claims**



1. A system for detecting and identifying the location of each of a plurality of bowling pins standing within a pin standing area, comprising sweep means comprising an array of acoustic transducers for transmitting bursts of energy toward said standing pins and generating an analog signal representing each echo signal from one of said pins, means for providing said acoustic transducers with bursts of energy

memory means for storing program control signals and data words,

means for selectively converting said analog signals from the transducers into digital data words for storage as direct data in said memory, and for selectively converting signals from the next adjacent transducer into digital words for storage as cross data in said memory, and

a data processor for converting said direct and cross data words into strings of data defining the location of each standing pin.

4,148,481
ACOUSTIC BOWLING PIN DETECTION SYSTEM

W. R. Smith-Vaniz, Fairfield, Conn., assignor to AMF Incorporated, White Plains, N.Y.

Filed Jul. 1, 1977, Ser. No. 812,359
Int. Cl.[2] A63D *5/04*
U.S. Cl. 273—54 E **18 Claims**

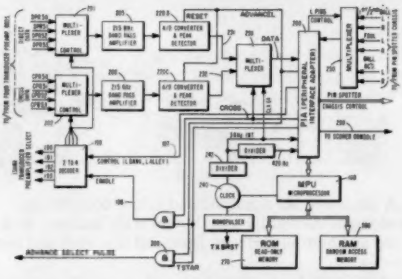
1. In a system for detecting and locating bowling pins standing in a defined area, the combination comprising:

a linear array of acoustic transducers,

first selection means for selecting each one of said transducers for transmitting acoustic energy at a selected frequency toward said standing bowling pins,

means for analyzing echo signals from said standing pins comprising:

analog-to-digital converter means for developing a digital representation of the magnitude of said acoustic reflections within a given period of time, and



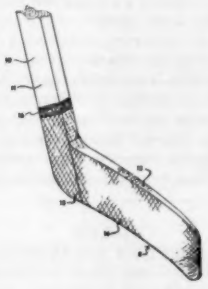
a microprocessor for accepting the output of said converter and analyzing said data to determine pin count and pin locations, and

second selection means for causing the transfer of said echo signals from one or more of said transducers to said analyzing means.

4,148,482
HOCKEY STICK REINFORCING METHOD AND PRODUCT

Roy M. Harwell, Jr., and Richard T. Hill, both of Gastonia, N.C., assignors to Charles R. Rhodes

Filed Jan. 31, 1977, Ser. No. 763,102
Int. Cl.[2] A63B *59/14*
U.S. Cl. 273—67 A **4 Claims**



1. A method for fabricating a reinforcing coating for the impact surfaces of hockey sticks comprising the steps of:

a. continuously knitting a length of textile tubing having a circumference, when stretched longitudinally, less than the circumference of the corresponding portion of the hockey stick;

b. in the knitted length of textile tubing according to (a), knitting relatively long lengths of sleeve areas from a material selected from a group containing fiberglass, polyester, and Kevlar ®, separated by relatively narrow bands of a run resistant material;

c. cutting said continuous lengths of textile tubing to proper lengths for use on a hockey stick by severing said continuous length through each of said bands;

d. assembling the resulting length of tubing over the tip, impact area, and blade/handle joint of a hockey stick; and

e. applying a resinous coating to the tubing and grinding off excess material.

2. A continuous knitted length of textile tubing for use, when cut into lengths, as the coating for the tip, impact surface, and

blade/handle joint of a hockey stick, said textile tubing comprising:

a. a plurality of spaced, relatively long sleeve areas formed from a yarn exhibiting strong durable, reinforcing characteristics, with a relatively smooth surface, said sleeve areas of such diameter as to be greater in diameter than the periphery of a hockey stick blade in a relaxed stage, but less in diameter when stretched longitudinally;

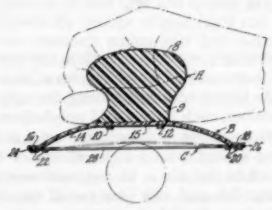
b. relatively short bands separating said long sleeve areas and formed of a yarn having relatively rough surface characteristics constructed in lock stitches.

4,148,483

HANDLELESS HAND RACKET

Alvin H. Sweet, 5168 Wood Ave. Apt. B, South Gate, Calif. 90280, and Don A. Sweet, 8371 Standustrial St., Stanton, Calif. 90680

Filed Apr. 10, 1978, Ser. No. 894,905
Int. Cl.[2] A63B *59/00*
U.S. Cl. 273—67 R **4 Claims**



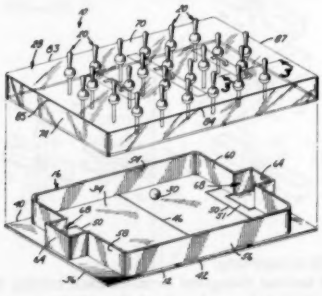
4. In combination with a racket body comprising a recessed area and mutually aligned fastening means disposed adjacent opposite raised edges thereof, the improvement comprising a pair of anchorage strips held by the respective fastening means and connected to each other by a plurality of generally parallel, laterally separated, resilient strings formed integral with said anchorage strips and disposed spacedly overlying said recessed area, said racket body being stressed between said raised edges do as to lengthwise tension the connecting strings.

4,148,484

SOCCER GAME

Slavi A. Georgiev, and Dimitraki J. Stojnov, both of 10263 Pleasant Ave. S., Bloomington, Minn. 55420

Filed Jan. 20, 1978, Ser. No. 871,031
Int. Cl.[2] A63F *7/06*
U.S. Cl. 273—85 R **9 Claims**



1. A simulated soccer game, comprising:

a base member having a playing surface thereon;

a transparent top member;

means for mounting said top member above said playing surface;

a plurality of playing elements, each of said playing elements having an object striking portion extending below said top member and a manual actuating portion extending above said top member; and

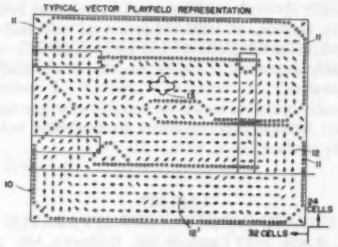
means for independently mounting each of said playing elements in said top member for pivotal movement about a point so that said striking portion of each of said playing elements is movable radially in any direction from a longitudinal axis extending through said point generally perpendicular to said playing surface.

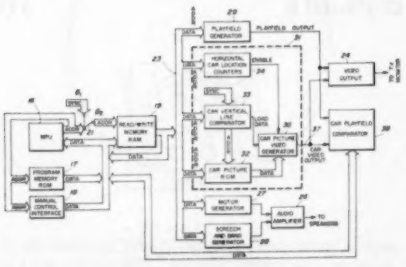
4,148,485

DRIVING GAMES METHOD FOR AUTOMATICALLY CONTROLLED CARS

Lyle V. Rains, San Jose, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Sep. 19, 1977, Ser. No. 834,702
Int. Cl.[2] A63F *9/14*
U.S. Cl. 273—86 B **12 Claims**





10. A driving game method where at least one controlled car is driven on a track comprising the following steps: dividing a display field into a plurality of cells for presenting a variety of game indicia including a track and at least one car, dividing said track into cells and assigning each cell a direction vector, such vector being assigned different directions in accordance with the change of direction of said track; initiating movement of said car along said track; intermittently sensing the direction vector of said car which represents current direction of motion on said track, sensing such car's cell position on the track and comparing the car direction vector to the assigned vector of said cell position; and incrementing said direction vector of said controlled car toward assigned vector direction.

4,148,486

PINBALL TOY WITH BALL EJECTOR

Sidney Tepper, 24 Edgewood Ter., Millburn, N.J. 07041

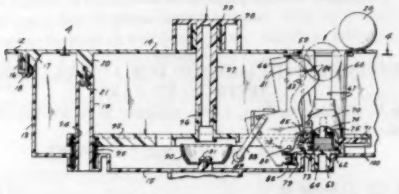
Filed Nov. 23, 1977, Ser. No. 854,187
Int. Cl.[2] A63B *63/04*; A63D *13/00*; A63F *7/02*
U.S. Cl. 273—121 R **10 Claims**

1. A pinball toy comprising:

(a) an inclined playing surface,

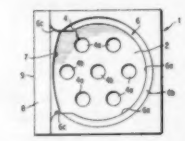
(b) a plurality of holes in said playing surface,

(c) a ball sized to pass through said hole,
(d) means for introducing said ball on to the higher portion of said playing surface,
(e) a ball-ejecting member below said playing surface in alignment with each hole, each ball-ejecting member being sized to pass through its respective hole,
(f) independently operable means responsive to passing of said ball downwardly through each hole for causing said



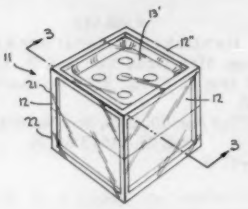
ball-ejecting member associated with that hole to pass upwardly through said hole and return said ball to said playing surface, at least a portion of said ball-ejecting member remaining above said playing surface until it is manually depressed to a position below said playing surface, and
(g) manually operable means for simultaneously returning all of said ball-ejecting members to positions below said playing surface.

4,148,487
SURFACE GAME TARGET APPARATUS
Thomas T. Bouve, 5419 Lambeth Rd., Bethesda, Md. 20014
Filed Aug. 15, 1977, Ser. No. 824,823
Int. Cl.[2] A63B *71/06*
U.S. Cl. 273—127 B **3 Claims**



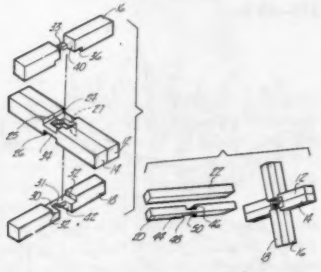
1. A game board, positioned on any level surface, onto which balls are rolled which comprises:
a plurality of balls;
a sloped planar surface with a first slope angle, provided with a plurality of holes, having a front linear edge portion;
a side border substantially surrounding an outer edge of said surface and displaced above said surface, said side border being contoured to form a U-shaped inclined border around a side and back portion of said side border;
an inclined edge planar surface with a second slope angle connected to said linear edge portion wherein a first ball rolled onto said planar surface subsequently rolls off of said game board should said ball fail to become lodged within one of said holes or become otherwise obstructed so as to be located between a player location and the game board; and
a front plated border mounted on said sloped planar surface forming a curved line of intersection between said sloped planar surface and said inclined edge planar surface, which interconnects said first and said second contour surface such that a rolled ball which gently strikes said front plated border is deflected towards the rear portion of said sloped planar surface and can become lodged against said front plated border positioned near the front center of said sloped planar surface.

4,148,488
RANDOM SELECTION APPARATUS
Walter Kohlhagen, 818 Oakley Ave., Elgin, Ill. 60120
Filed Jun. 14, 1976, Ser. No. 695,929
Int. Cl.[2] A63F *9/04*
U.S. Cl. 273—146 **33 Claims**



1. A die comprising a sealed polyhedron container having a plurality (N) of faces each of which carries a window, a polyhedron within the sealed container having the same number of faces as the container, each face of said polyhedron bearing an insignia, each face of the polyhedron being maintained in register with and spaced from a different one of the window carrying faces while the die is at rest, said container being configured so that for each rest position of the die there are two substantially horizontal faces of the container, said horizontal faces being upper and lower faces of the container, an optical shielding liquid within said container, the container, liquid, faces and insignia being such that when the die is at rest the liquid obscures from view the insignias on all of the insignia bearing faces except the insignia on the upper, substantially horizontal face of the polyhedron.

4,148,489
PUZZLE
Joseph F. Pidgeon, 31180 Walden Ct., Walled Lake, Mich. 48088
Filed Jun. 20, 1977, Ser. No. 808,129
Int. Cl.[2] A63F *9/12*
U.S. Cl. 273—160 **5 Claims**



1. A puzzle comprising:
a first and second elongated member each having the same cross-sectional shape placed side-by-side in abutment with each other, said first and second members each having a substantially central, axial channel formed on one side so that when said first and second members are placed together in said side-by-side abutting engagement, said channels face and register with each other and together form a first throughbore of substantially said cross-sectional shape joined with a second throughbore at one corner

having a second cross-sectional shape, each of said first and second members having transverse channels formed across the front and back of each member, said front and back transverse channels of the first member respectively being in registry with the front and back transverse channels of the second member and lying in a plane generally perpendicular to the axial channels;

a third and fourth elongated member, each having a transverse and axial channel formed there across, said third member being positioned laterally across the back of said first and second members so that the third member transverse channel registers with and is received within the registering back transverse channels on said first and second members, said fourth member being positioned laterally across the front of said first and second members so that the fourth member transverse channel registers with and is received within the registering front transverse channels on said first and second members, whereby said third and fourth members prevent movement of said first and second members relative to each other and relative to said third and fourth members, wherein the axial channels of said third and fourth members register with at least a portion of said first and second axial throughbores and wherein the receipt of said third and fourth member transverse channels within said first and second member transverse channels prevents movement of said third and fourth members axially and transversely along the plane of the respective third and fourth member transverse channels;

a fifth elongated member having a reduced area central portion corresponding to and received within the second throughbore having said second cross-sectional shape by transversely sliding said fifth member after its insertion into the first axial throughbore after which said first axial throughbore remains open and whereupon said fifth member abuts against and prevents movement of said third and fourth members away from each other and simultaneously prevents axial and lateral movement in the direction of the axis of said third and fourth member of said fifth member; and

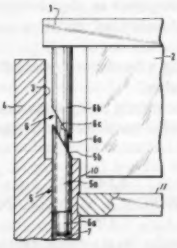
a sixth elongated member received and frictionally retained within said first axial throughbore thereby preventing lateral movement of said fifth member toward said axial bore and locking said puzzle together.

4,148,490

MINIATURE GOLF COURSE INCLUDING PIVOTABLE OBSTACLE

Jan Goransson, Ekliden 20, Orkelljunga, Sweden (286 00)

Filed May 17, 1977, Ser. No. 798,944
Claims priority, application Sweden, May 20, 1976, 7605715
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—176 B **6 Claims**



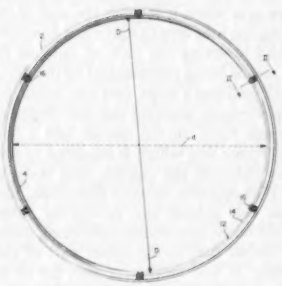
1. In a mini-golf course comprising a plurality of a number of course sections which are adapted to be connected to each other so as to form a playing surface of a desired length, an obstacle device for said playing surface, said obstacle device being movably positioned on at least one of said sections, each section having a rim for defining the edge of the playing surface of the section, the obstacle device comprising an elongate support member having at least one obstacle member mounted thereon for movement longitudinally thereof and a vertical pivot axle mounted in said rim about which axle the support member is pivotal, with respect to the rim, between a position in which the support member projects away from the rim across the playing surface so that at least one obstacle member can be disposed to obstruct a portion of the playing surface, and a position in which the support member is moved into a position relative to the rim so that said at least one obstacle member can be moved into a cavity formed by a post on the rim, the cavity being disposed relative to said rim so as to require the support member to be raised before the at least one obstacle member can be moved into the cavity.

4,148,491

PHONOGRAPH RECORD ADAPTER

Martin F. Stark, 47 Old Orchard Rd., Sherborn, Mass. 01770, and Robert L. Whalen, 5 Howland St., Cambridge, Mass. 02138

Filed Jan. 6, 1978, Ser. No. 867,386
Int. Cl.[2] G11B *23/02*
U.S. Cl. 274—1 R **1 Claim**



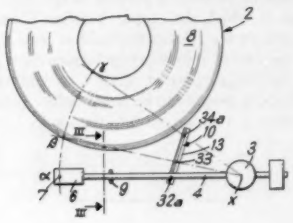
1. A phonograph record adapter comprising a rigid ring having a top surface and a bottom surface with an inside wall surface extending therebetween, the diameter of said ring at said inside wall surface being slightly greater than the outside diameter of a phonograph record, said ring being adapted to receive said phonograph record therein, a flange extending inwardly of said ring, the interior diameter of said flange being less than the diameter of said phonograph record, said flange being adapted to engage and overlie a surface of said phonograph record, said adapter being adapted to exert a force upon said record when said record is in playing position to substantially negate the effects of warpage in said record so long as said adapter is disposed thereon, said bottom wall being provided with a plurality of first recess portions and said inside wall surface being provided with a plurality of second recess portions in alignment respectively with said first recess portions, and a leaf spring member disposed in each of said recesses, a first portion of said leaf spring member being fixed to said ring in one of said first recess portions, and a second portion of said leaf spring member being inclined from said first portion and extending inwardly of said ring toward said flange, said second portion of said leaf spring member being engageable with an edge portion of said record to center said record in said ring and being adapted to enter one of said second recess portions.

4,148,492

RECORD PLAYERS

Marc Bachelet, 11, rue Chapon, 75003 Paris, France

Filed Jul. 11, 1977, Ser. No. 814,538
Claims priority, application France, Jul. 20, 1976, 76 22151
Int. Cl.[2] G11B 17/06, 3/10
U.S. Cl. 274—15 R 7 Claims



1. A record player comprising a chassis having a slot, a turntable rotatably mounted on the chassis on which a record disc is placed, a pivot fixed on the chassis, a tone arm mounted on said pivot at one of its ends and carrying a pick-up at its other end, said arm normally resting in a stop position on a support member fast with the chassis, arm displacement means for lifting said arm, causing the arm to move in a generally horizontal circular arc and for lowering the pick-up onto the lead-in of the groove of the disc, located between the fixed support member for the tone arm and its pivot, said means lifting the tone arm when it reaches the end of the groove of the disc, causing the tone arm to move in a generally horizontal circular arc and lowering the pick-up onto its fixed support member, said means being independent of the drive movement of the turntable, stationary stops, said arm contacting said stops during its displacement, wherein the arm displacement means comprise a frame fixed on the chassis and a body which is guided by said frame and which is mounted to slide vertically in said slot provided in the chassis, said body being driven selectively in two opposite vertical directions, said body having an endless belt guided and driven by rollers rotatably mounted on said body, said endless belt being disposed so as to present a rectilinear part in the upper part of the body, said tone arm resting on said rectilinear part for its movement in said circular arc, and drive means for said body and said rollers, said drive means being selectively operated to drive the body in its vertical motion and to drive the rollers to thereby drive the endless belt and to drive the tone arm in its circular arc.

4,148,493

SEALING DEVICE FOR HIGH PRESSURE APPARATUS

Leonid G. Gorodissky, Moscow, U.S.S.R., and Nikolai T. Romanov, deceased, late of Moscow, U.S.S.R. (by Anastasia I. Romanova, administrator), assignors to Vsesojuzny Nauchno-Issledovatelsky I Experimentalny Istitut po Pererabotke Khinicheskikh Volokon, U.S.S.R.

Filed Apr. 14, 1978, Ser. No. 896,573
Int. Cl.[2] B08B 3/00; F26B 25/00; F16J 15/54
U.S. Cl. 277—12 3 Claims

1. A sealing device for a high pressure apparatus designed for treatment of fabric and comprising:

a housing with two openings for inlet and outlet of fabric;

two rolls being in contact with each other, accommodated inside said housing and adapted to rotate in opposite directions for transporting the fabric being treated;

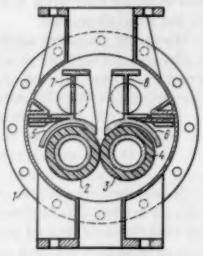
two spaced apart parallel bars accommodated inside said housing and arranged parallel to said rolls;

said two bars having their ends made as trunnions mounted in bearings in the opposite walls of said housing;

said trunnions having overhung extensions protruding beyond said housing;

two sealing members, each of them being secured on said respective bar inside said housing;

a roll suspension means used to suspend said rolls from said overhung extensions;



a means for radial displacement of said rolls with respect to said corresponding bars;

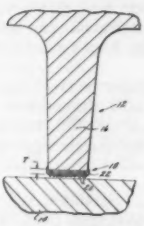
means for rocking motion of said sealing members with respect to the axes of said bars.

4,148,494

ROTARY LABYRINTH SEAL MEMBER

John W. Zelahy, West Chester; Norman P. Fairbanks, and Robert E. Maegly, both of Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 21, 1977, Ser. No. 862,783
Int. Cl.[2] F01D 11/08, 5/20; F16J 15/44
U.S. Cl. 277—53 4 Claims



1. In a rotary labyrinth gas seal in which a first member includes at least one seal tooth having a tip which cooperates with a second member to inhibit gas flow therebetween, the tip comprising a metallic body and an abrasive tip, the improvement wherein:

the abrasive tip comprises an electrodeposited metal matrix entrapping a plurality of abrasive particles protruding from the tip,

the particles having a hardness greater than the hardness of the second member,

the thickness of the matrix being less than the longest dimension of the abrasive particles protruding from the tip.

4,148,495

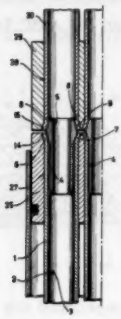
SEALING MEANS FOR A MEMBRANE FILTRATION UNIT

Cornelis van Zon, Zwolle, Netherlands, assignor to Wafilin B.V., Em Zwolle, Netherlands

Filed Apr. 20, 1978, Ser. No. 898,441
Claims priority, application Netherlands, Apr. 21, 1977, 7704385
Int. Cl.[2] F16L 35/00; F16J 15/04
U.S. Cl. 277—115 13 Claims

1. A connection of a membrane assembly support tube supporting a filtration membrane with another tube part, in partic-

ular a bend, whereby said assembly support tube and the other tube part each present an end recess, conically widening toward the end face of the other tube part, the assembly support tube respectively, and being provided with a sealing ring which conically tapers at the outer side from the centre to each



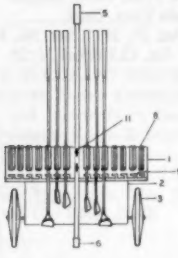
of the ends, corresponding to the conical direction of the recesses, which sealing ring is provided with a sleeve of elastomeric material, which extends to within the assembly support tube, and co-operates with the filtration membrane, wherein an end face or end faces of the membrane assembly support tube are at least partly free with respect to the sealing ring material.

4,148,496

GOLF CART

John S. Zimmer, 413 S. Ellison La., Waynesboro, Va. 22980

Filed Feb. 6, 1978, Ser. No. 875,281
Int. Cl.² B62B *1/14*
U.S. Cl. 280—47.19 **8 Claims**



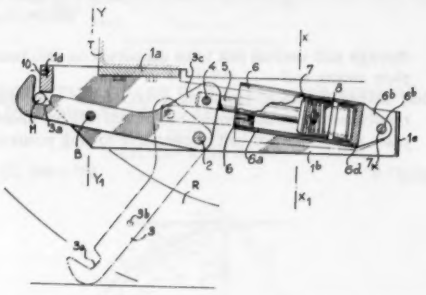
1. A golf cart comprising: a container having a pair of opposed side walls, opposed front and rear walls, said rear wall having a partial opening therein, an enclosed bottom portion, and a top portion slanted downwardly and forwardly at approximately 45° from the vertical; wheels rotatably mounted on said side walls at the bottom portion thereof; a platform secured to said top portion of said container and forming the top thereof; flap means hingedly mounted on said rear wall to cover said opening; an elongated handle secured to said platform; a plurality of club holding means affixed to said platform, said holding means comprising resilient tubular members arranged generally vertically on said platform and having an upwardly opening longitudinal section cut out therefrom to thereby form clamps; and a plurality of club positioning means affixed to said platform, said positioning means comprising hook members opening in a substantially horizontal direction and being aligned with said holding means, whereby said holding means grip said clubs along the lower portion of the shafts thereof and said positioning means provide a fulcrum point which, when engaged, allows easy insertion and removal of said clubs from said holding means.

4,148,497

SEMI-TRAILER LIFTING AND COUPLING GEAR FOR TRACTOR VEHICLES

Robert Genty, Pont Sainte Marie, France, assignor to Rene Baudin, Pont Sainte Marie, France

Continuation-in-part of Ser. No. 694,352, Jun. 9, 1976, abandoned. This application Jan. 31, 1977, Ser. No. 764,277
Claims priority, application France, Mar. 22, 1976, 76 08174; Nov. 23, 1976, 76 35191
Int. Cl.² B60D *1/10*
U.S. Cl. 280—479 A **20 Claims**



1. Device for lifting the pole of a trailer of the semi-carried type and coupling same to a tractor vehicle, which comprises a supporting bracket secured beneath, and to the rear of said tractor, substantially in alignment with the longitudinal center line thereof, and further comprising a lever having a hook-shaped rear end adapted to engage the shackle of said trailer pole and a crosshead-shaped opposite end, said lever being pivoted to said supporting bracket about a horizontal axis, a hydraulic cylinder and piston unit mounted on the vehicle and connected to move the hook shaped rear end portion of the lever from a low position corresponding to the picking up of said shackle to a high coupling and hauling position in which said lever is locked against motion by a safety locking system, and a pivot pin for mounting said lever on said supporting bracket about said horizontal axis, said safety locking system including a visible element movable between one position to indicate a locked condition and another position to indicate an unlocked condition, said hydraulic cylinder and piston being adapted to pull said crosshead portion of said lever for lifting same being pivoted to said supporting bracket about an axis located upstream of the plane containing the axis of the rear axle of said tractor, said lever being adapted to be locked in relation to said bracket in the upper coupling position by means of said safety locking system including a latch bolt adapted to abut an inwardly contoured portion of said crosshead shaped opposite end.

4,148,498

TRAILER HITCH

Thomas A. Taylor, Jr., 212 S. 8th St., Chickasha, Okla. 73018

Filed Oct. 17, 1977, Ser. No. 842,626
Int. Cl.² B60D *1/18*
U.S. Cl. 280—482 **6 Claims**

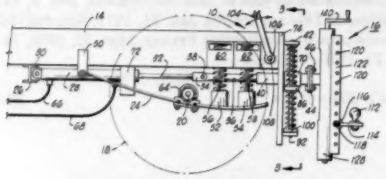
1. A trailer hitch for mounting on a truck having first and second longitudinal, rear frame members, comprising:

back plate means rigidly secured to the rear end of said first and second frame members, said back plate means having a vertical slot generally centrally thereof;

first and second spring members rigidly secured to said back plate means on opposite sides of said slot to provide spring movement parallel to the vertical direction of said slot; and

bearing plate means vertically resiliently supported intermediate said first and second spring members;

hydraulically extendible tow bar means, a first end of said tow bar means being rigidly secured to said frame members, a second end of said tow bar means being extendible rearward in parallel alignment with said frame members



through said vertical slot to be supported on said bearing plate means; and

ball assembly means, including a connector ball, that is rigidly secured to the second end of said tow bar means to place said connector ball in operative towing position.

4,148,499

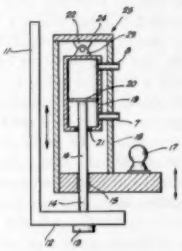
HYDRAULIC TRAILER LIFT

Herbert J. Johnson, 32 Maverick Park, Lander, Wyo. 82520

Filed Dec. 8, 1977, Ser. No. 858,668

Int. Cl.[2] B60D *1/16*

U.S. Cl. 280—490 R **3 Claims**



1. A device for lifting and lowering a trailer or mobile home or the like on a towing vehicle comprising:

(a) a hitching ball;

(b) a first horizontal support plate permanently affixed to the towing vehicle and positioned below said hitching ball;

(c) a vertically-disposed casing;

(d) means for permanently affixing said ball to a second support plate integral with said casing;

(e) a vertically-disposed hydraulic cylinder within said casing;

(f) two (2) ports for entry and exit of hydraulic fluid to and from said cylinder and casing;

(g) means for permanently affixing said cylinder to and within said casing;

(h) a piston rod permanently affixed to said first horizontal support plate and protruding vertically into and within said casing and cylinder;

(i) a piston affixed on the upper end of said rod and within said cylinder; and

(j) means for injecting hydraulic fluid into the chamber of said cylinder above said piston for lifting of said hitching ball and into the chamber of said cylinder below said piston for lowering of said hitching ball.

4,148,500

SKI WITH GRIPPING DEVICE

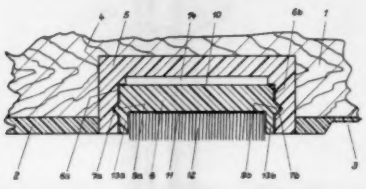
Henri P. Nidecker, Place de l'Industrie 2, 1180 Rolle, Vaud, Switzerland

Filed Dec. 12, 1977, Ser. No. 859,877

Claims priority, application Switzerland, Dec. 21, 1976, 16122/76

Int. Cl.[2] A63C *5/04*

U.S. Cl. 280—604 **3 Claims**



1. A ski having a longitudinal slot in its underface, means fixed in said slot and defining a cavity with a mouth at the plane of the underface of the ski, a parallelepipedic element having one smooth face and an opposite face having a retentive surface, means detachably to mount said element in said cavity with one of said faces in a position to form a part of the underface of the ski and the opposite face housed within said cavity.

4,148,501

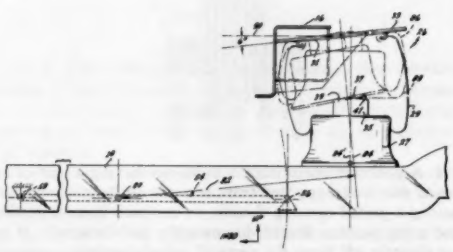
SUSPENSION SYSTEM

Laird W. McKee, La Jolla, Calif., assignor to Rohr Industries, Incorporated, Chula Vista, Calif.

Filed Dec. 27, 1977, Ser. No. 864,211

Int. Cl.[2] B60G *11/26*

U.S. Cl. 280—711 **8 Claims**



1. An improved suspension system for a vehicle including a body-supporting frame and wheel-supported axle, comprising:

a pair of air spring units each having a lower air spring seat, an airspring body, an upper spring seat, and a bump stop member mounted on said lower spring seat within said air spring body, said bump stop having an apex at its center and the top surfaces slope downwardly therefrom, the inboard slope having substantially the same angle as the inner surface of said upper spring seat,

said air spring units having their lower air spring seats attached to said axle adjacent opposite ends of said axle, and

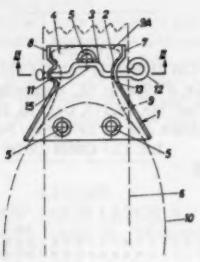
means for mounting the top of said air spring units to said frame at an angle such that the inboard side of the top of each air spring unit lies at a vertical height lower than the outboard side of the top of each air spring unit.

4,148,502

CROSS-COUNTRY SKI BINDING

Adolf Staufer, and Rudolf Hieblinger, both of Ried im Innkreis, Austria, assignors to Fischer Gesellschaft m.b.H., Ried im Innkreis, Austria

Filed Jul. 19, 1977, Ser. No. 816,947
Claims priority, application Austria, Jul. 22, 1976, 5397/76; Jul. 22, 1976, 5398/76
Int. Cl.[2] A63C 9/18
U.S. Cl. 280—615 11 Claims



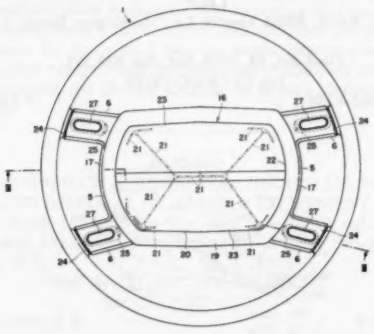
1. A cross-country ski binding comprising a toe iron which has a soleplate for fixing the entire toe iron to a ski, said soleplate having longitudinally extending edge portions which are turned up to extend substantially at right angles to said soleplate and which constitute side portions which define a space that tapers toward the tip of the ski and serves to receive a portion which projects from the sole of a cross-country skiing boot in front of its toe portion, said toe iron further comprising a clamping member for holding the projecting portion in position, said clamping member having a first end pivotally connected to a part of one of said side portions and a second end adapted to be releasably locked directly to a part of the other of said side portions, said clamping member being movable in a plane that is transverse to the longitudinal direction of the ski to releasably lock said second end to the other of said side portions.

4,148,503

INFLATING TYPE OCCUPANT RESTRAINT DEVICE

Harunori Shiratori, Toyota; Yoshio Yamazaki, Aichi; Takaharu Yoshimi, Okazaki, and Junichi Hori, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Toyoda Gosei Co., Ltd., Nagoya, both of, Japan

Filed Oct. 5, 1976, Ser. No. 729,848
Claims priority, application Japan, Mar. 26, 1976, 51-34076
Int. Cl.[2] B60R 21/08
U.S. Cl. 280—731 1 Claim



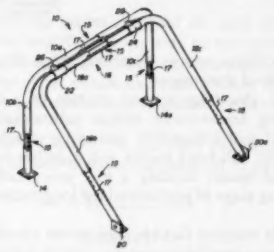
1. An inflating type occupant restraint device for a motor vehicle comprising a case for a gas bag folded up and encased so as to inflate only when a gas generator operates, said case being an integral structure which includes side walls secured to a fixed part of the vehicle and a lid surface portion thinner than said side walls, said lid portion being made of a ductile and comparatively hard material having a series of frangible weakened lines extending radially from near the center of the surface of said lid portion and leading at least to four corners of said lid surface portion, a peripheral portion extending from, raised above, and surrounding said lid portion and connecting it and said side walls, said peripheral portion being thinner than said side walls, and a cover sheet secured to and covering said lid surface portion but not said peripheral portion so as to cover the entire area of said frangible lines, said cover sheet being made of a material which ruptures more easily than said frangible lines.

4,148,504

PROTECTIVE GUARD FOR PASSENGER VEHICLE

John D. Rushing, 4714 Lester Dr., Arlington, Tex. 76016

Filed Apr. 4, 1977, Ser. No. 784,526
Int. Cl.[2] B60R 21/02
U.S. Cl. 280—756 6 Claims



1. A protective guard for a passenger vehicle to be mounted juxtapositioned and transverse of a seating arrangement, the combination comprising:

a generally U-shaped roll bar pipe section having a top member and two leg members, the leg members including means for mounting said roll bar to the vehicle substantially transverse to the seating arrangement,

a generally U-shaped support brace pipe section also having a top member and two leg members,

a hinge of shortened pipe sections having an inside diameter larger than the outside diameter of said support brace for receiving said support brace to pivotally interconnect the top members in a substantially parallel relationship, the shortened pipe sections welded to said roll bar, and

first and second mounting pads, one pivotally mounted to each of the leg members of said support brace at the end opposite the top member.

4,148,505

AUTOMOBILE BODY COLLISION ENERGY ABSORBING SYSTEM

Donald W. Jensen, 300 E. 40th, Apt. 11M, New York, N.Y. 10016, and Addison S. Beckley, 48 Baltusrol Way, Short Hills, N.J. 07078

Continuation of Ser. No. 761,898, Jan. 24, 1977, abandoned. This application May 3, 1978, Ser. No. 902,739
Int. Cl.[2] B62D 21/00
U.S. Cl. 280—784 32 Claims

1. Modular, impact energy-absorbing system for the front and/or rear ends of automobiles in which bumpers, fenders and other structures generally outwardly of the engine and/or truck compartments are eliminated or not provided and which is designed for frontal and corner collisions, comprising:

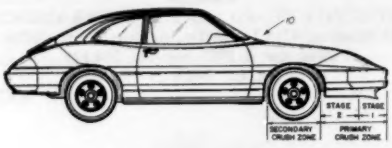
(a) first generally vertically disposed transverse bulkhead

means extending generally at least across the width of the automobile engine and/or truck compartments;

(b) second transverse generally vertically disposed bulkhead means for each wheel well located outwardly of the tires and secured to the automobile body and forming a high speed bulkhead;

(c) third generally vertically disposed bulkhead means located longitudinally outwardly a predetermined distance from and extending at least generally across the transverse dimension of said first bulkhead means and operatively interconnected with said first bulkhead means and forming a low speed bulkhead;

(d) energy absorbing first module of cellular material located in and substantially filling the area forwardly of said second bulkhead means, and filling the area between said first and third bulkhead means, said first module together with at least said second bulkhead means comprising a high



speed collision energy-absorbing stage of predetermined longitudinal dimensions;

(e) energy absorbing second module of cellular material extending transversely across substantially the entire width of said automobile and being attached at least to said third bulkhead means and together with said third bulkhead means forming a low speed collision energy-absorbing stage of predetermined longitudinal dimensions; and

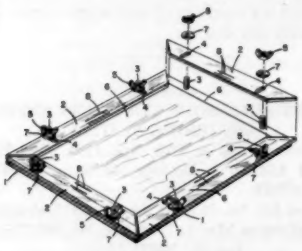
(f) separate external flexible skin means enveloping each of said energy absorbing modules over those surfaces thereof not contacting or abutting body, frame and bulkhead components, said skins being attached to said body, frame or bulkhead components and which together with said first and second cellular material modules and said first, second and third bulkhead means forms a controlled, successive, two-stage, energy management system having a predetermined body-crush deceleration distance.

4,148,506

PORTABLE DRAWING BOARD

Terrence R. Lamb, Washington, D.C., assignor to Art Products, Inc., Chevy Chase, Md.

Filed Oct. 18, 1977, Ser. No. 843,230
Int. Cl.[2] B42D *3/00*; B25B *1/00*
U.S. Cl. 281—45 **7 Claims**



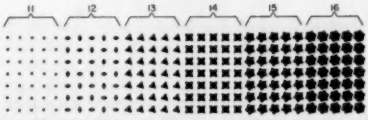
1. A drawing board comprising, in combination, a substantially rectangular board member; means for clamping one or more sheets of paper to said board member; said means comprising a series of plate members, each plate member extending longitudinally along a side edge of said board and forming, when secured to the said board member, a mechanically adjustable margin for said sheets of paper; means projecting from said board and said plate members for removably securing said plates to said board member, said plate members having openings provided therein; said openings provided in said plate members comprising elongated slots extending perpendicular to the edges of said board whereby said plate members may be moved perpendicular relative to the side edge of said board for adjusting the margin formed by said plates and, when in an open position, for removing one or more of said sheets of paper.

4,148,507

SYMBOLS FOR IDENTIFYING CHARACTERISTICS

Howard T. Fisher, 67 Sparks St., Cambridge, Mass. 02138

Continuation of Ser. No. 98,573, Dec. 16, 1970, abandoned. This application Jun. 9, 1976, Ser. No. 584,938
Int. Cl.[2] G09B *29/00*
U.S. Cl. 283—34 **8 Claims**



1. In a presentation of a plurality of characteristics, said presentation including a plurality of areas, each of said areas presenting one of said characteristics, that improvement wherein a first one of said areas comprises a regular array of a plurality of the symbol of FIG. **4** on a background of contrasting color, the extent of each of said plurality of the symbol of FIG. **4** being the same;

a second one of said areas comprises a regular array of a plurality of the symbol of FIG. **5** on a contrasting background, the extent of each of said plurality of the symbol of FIG. **5** being the same and greater than the extent of each of said plurality of the symbol of FIG. **4**;

a third one of said areas comprises a regular array of a plurality of the symbol of FIG. **6** on a contrasting background, the extent of each of said plurality of the symbol of FIG. **6** being the same and greater than the extent of each of said plurality of the symbol of FIG. **5**; and

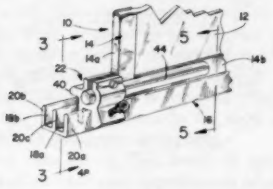
each of said areas includes the same number of symbols per unit area.

4,148,508

LOCKING DEVICE FOR SLIDING WINDOWS AND THE LIKE

Ronald B. Adair, 20801 Hunter La., Huntington Beach, Calif. 92646

Filed Jul. 13, 1978, Ser. No. 924,292
Int. Cl.[2] E05C *19/18*
U.S. Cl. 292—258 **7 Claims**



1. A means for limiting the sliding movement and preventing the removal of a sliding panel of the type associated with a channelled casement frame structure, the lower portion of said

panel being slidably received in the lower channel track of said casement, wherein said means comprises:

a main body member having oppositely disposed depending leg members;

a longitudinal slot defined between said leg members and adapted to be secured to said channel track;

means for selectively securing said main body to said channel track;

a laterally projecting boss member longitudinally formed along said body member positioned for abutting engagement with said sliding panel;

a longitudinally disposed bore formed in said body; and

an elongated bar member mounted to said body member and extending longitudinally outward from one side thereof, wherein the bar is positioned over part of said channel track and adjacent the lower edge of said sliding panel to prevent removal of said panel from said channel track thereof.

4,148,509

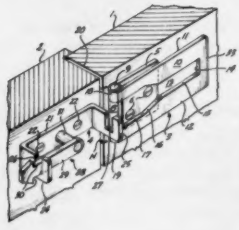
HASP DOOR LATCH

Lyall A. McLennan, 2896 Trinity St., Vancouver, British Columbia, Canada (V5K 1E9)

Filed Mar. 7, 1977, Ser. No. 774,748

Int. Cl.[2] E05C *19/08*

U.S. Cl. 292—270 **10 Claims**



1. Latch mechanism for a closure member openable relative to a frame member comprising a hasp strap having an elongated slot therein, means for mounting said hasp strap on one of the members for swinging of said hasp strap about an axis generally perpendicular to the length of said hasp strap slot, said hasp strap slot having a closed end remote from said axis, and keeper means mounted on the other member and slidingly engageable with said hasp strap slot to enable the closure member to move relative to the frame member between closed position of the closure member and a predetermined limited slightly open position, said keeper means including bar means engageable with said slot when the door is in limited slightly open position, pivot means pivotally mounting said bar means for swinging about a substantially horizontal axis and bar support means for supporting said bar means substantially horizontally and engaged with the closed end of said hasp strap slot for restraining the closure member in limited slightly open position.

4,148,510

HAND OPERABLE SCOOP FOR THE COLLECTION AND DISPOSAL OF ANIMAL EXCREMENT

Patrick Brack, 145 E. 23 St., New York, N.Y. 10010, and Arnold S. Brack, Grandview, Mo., assignors to Patrick Brack, New York, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,547

Int. Cl.[2] A47F *13/52*

U.S. Cl. 294—1 R **5 Claims**

1. A hand operable scoop for collecting and disposing of animal excrement comprising:

(a) a pair of concave shell halves each formed with smooth compound curving wall surfaces, said curves generated about two axes throughout said wall surfaces, each of said shell halves having a smaller upper portion and a lower portion larger than said upper portion, said smaller portions sized to be easily received in and encompassed by the hand of a user;

(b) an integral hinge means connecting said pair of shell halves at their respective upper portions;

(c) straight edges disposed on said lower portion remote from said hinge means;

(d) finger receiving means disposed on each of said shell halves so that said shell halves may be manipulated about said hinge means from an open configuration to a closed configuration about animal excrement, while said straight edges scrape said animal excrement into said shell halves; and

(e) locking means disposed on said shell halves to lock said shell halves in their closed configuration to form a sealed container.

4,148,511

LIFTING AND LOWERING DEVICE FOR HANDLING GOODS CONTAINER

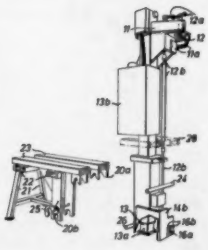
David Allen, Kettering, Northamptonshire, and Robert J. Rowley, Peterborough, both of England, assignee: Module Distribution Systems Limited, England

Filed May 20, 1977, Ser. No. 798,861

Claims priority, application United Kingdom, May 21, 1976, 21146/76; Jan. 26, 1977, 3152/77

Int. Cl.[2] B66F *7/16*

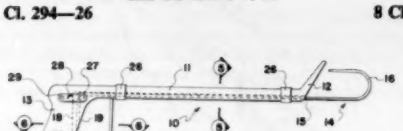
U.S. Cl. 294—67 R **9 Claims**



1. A lifting and lowering device for attachment to goods containers with ISO castings or the like fitments, which device comprises a post of non-circular section, an extendable leg of corresponding section housed within the post, hydraulic ram means within the post for effecting extension and retraction of the leg, a power pack supplying pressure liquid to the ram means, the power pack being mounted on the post, a sleeve slidable on the outside of the post, retractable locking means to lock the sleeve to the post in a number of positions along the post, first and second twist lock devices on the post and on the sleeve respectively whereby adjustment of the position of the sleeve on the post adjusts the spacing of the first and second twist lock devices, the twist lock devices being offset to one

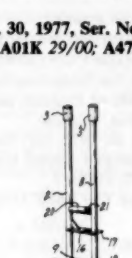
side of the post, and ground-engaging support means projecting from the device whereby with the leg fully retracted the post is capable of stable free-standing.

4,148,512
POSITIVE ACTION FISHING GAFF
Bruce C. Pendlebury, 161 Orchard Cres., Regina, Canada (S4S 5B7)
Filed Dec. 5, 1977, Ser. No. 857,388
Int. Cl.[2] B65G 7/12
U.S. Cl. 294—26 **8 Claims**



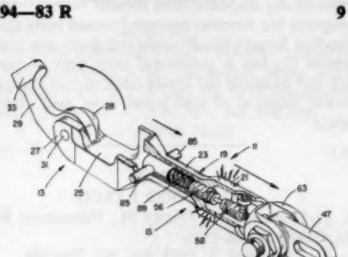
1. A positive action fishing gaff comprising in combination an elongated handle, an apertured platen on one end of said handle and a gaff hook component mounted for movement upon said handle from an open position to a closed position and vice-versa, said gaff hook component including a hook end portion engageable through said apertured platen when in the closed position and being clear of said platen when in the opened position and spring means normally urging said gaff hook component to said open position.

4,148,513
DEVICE FOR REMOVAL OF ANIMAL DROPPINGS
Camille Gagné, 1206 Alexis Simard St., Ville de la Baie, Canada (G7B 2K4)
Filed Nov. 30, 1977, Ser. No. 856,087
Int. Cl.[2] A01K 29/00; A47L 13/52
U.S. Cl. 294—55 **3 Claims**



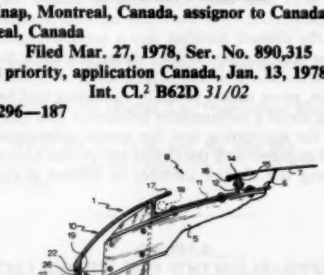
1. A device for dropping removal comprising a container having a bottom wall, a top wall, side walls, a rear wall and open at the front, an upstanding lip along the front edge of said bottom wall, a ramp downwardly forwardly extending from the top edge of said lip, a first handle rigidly secured to, and upstanding from, the top wall of said container, a battledore pivotally carried by said first handle for movement between a container-opening position and a container-closing position, said battledore having a lower edge adapted to sweep said ramp during closing movement, a second handle pivotally carried by said first handle and pivoted to said battledore for opening and closing said battledore, the pivot axis of said battledore on said first handle being located above and slightly forwardly of said ramp, the free lower edge of said battledore adapted to first scrape droppings from the surface to be cleaned, then scoop the same along said ramp past said lip during closing movement of said battledore, said ramp being transversely curved and having its center of curvature coinciding with the pivot axis of said battedore to said first handle, and with said battledore having a bottom flange and side flanges, said side flanges being in slidable contact with the side walls of said container in the closed position of said battledore.

4,148,514
TENSION RELEASE LATCH
Thomas W. McCullough, San Francisco, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 30, 1975, Ser. No. 591,577
Int. Cl.[2] B66C 1/38
U.S. Cl. 294—83 R **9 Claims**



1. A release latch for releasing an attached load when the tensile stress acting on said release latch exceeds a predetermined amount comprising:
(a) a hollow body having first and second ends;
(b) a latch section attached to said first end of said body for carrying a load;
(c) a means, interior to said body and attached to said second end of said body, for releasing said latch section to allow disengagement of said load from said latch section when the tensile stress upon said releasing means exceeds a predeterminable amount; and
(d) a support attachment section connected to said second end of said body via said releasing means for attaching said body to a supporting member.

4,148,515
CANT RAIL AND SIDE COVER COMBINATION FOR PASSENGER VEHICLE
Joseph Knap, Montreal, Canada, assignor to Canadair Limited, Montreal, Canada
Filed Mar. 27, 1978, Ser. No. 890,315
Claims priority, application Canada, Jan. 13, 1978, 294921
Int. Cl.[2] B62D 31/02
U.S. Cl. 296—187 **12 Claims**



1. A cant rail and side cover combination for a passenger car having a side wall and a roof framework, said combination comprising an elongated cant rail constructed and arranged to

operatively extend lengthwise longitudinally of the passenger car at the junction of the roof framework with said side wall, an elongated side cover constructed and arranged to operatively extend lengthwise longitudinally of the passenger car under said elongated cant rail, said cant rail including an upper longitudinal edge portion forming a roof gutter running longitudinally thereof, said side cover including an upper longitudinal edge portion and an intermediate longitudinal portion, said upper longitudinal edge portion forming an eaves drop gutter underlying said cant rail, and said intermediate longitudinal portion transversely depending from said upper edge portion of the side cover, being operatively spaced outwardly from said side wall, and cooperatively forming a door closure and hanger space therewith.

4,148,516

MEANS FOR AUTOMATICALLY OPENING REAR STORAGE COMPARTMENT COVER OF AN AUTOMOBILE

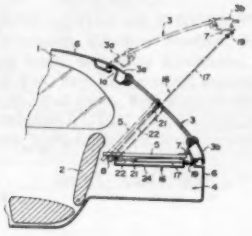
Yasuo Gotomyo, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Sep. 19, 1977, Ser. No. 834,547

Claims priority, application Japan, Sep. 20, 1976, 51-127222[U]

Int. Cl.[2] B60R *5/04*

U.S. Cl. 296—37.1 **8 Claims**



1. Automobile comprising a body having a rear opening, tailgate means mounted on said body for movement between a closed position wherein the tailgate means closes the rear opening and an open position wherein the rear opening is opened, seat means provided in said body for supporting items within said body, rear storage compartment defined in said body between said seat means and said tailgate means, rear compartment cover means for covering said rear storage compartment and having a hinged front end, cover actuating means including at least one flexible connecting member having one end connected to the cover means and the other end to the tailgate means so that the cover means is raised through said flexible member upon opening of said tailgate means, and yieldable retracting means for retracting said connecting member and including at least one elastic member having one end secured to the cover means and the other end provided with slidable connecting means for slidably engaging said elastic member with said connecting member so that said connecting member is retracted beneath the cover means whenever said connecting member is relieved of tension.

4,148,517

FRONT END LOADER

Fred T. Smith, Newark, Ohio, assignor to Sargent Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 497,129, Aug. 12, 1974, Pat. No. 3,988,979. This application Aug. 5, 1976, Ser. No. 712,090

Int. Cl.[2] B62D *25/00*; B60P *1/00*; B30B *15/16*

U.S. Cl. 296—50 **24 Claims**

1. In a front end loader including a refuse storage body having a rear opening, a tailgate pivotally positioned on said storage body for closing said rear opening, and hydraulic motor means for rotating said tailgate from a lowered locked position with respect to said storage body to a raised unlocked position with respect to said storage body for discharge of refuse from said storage body through said rear opening, the improvement comprising:

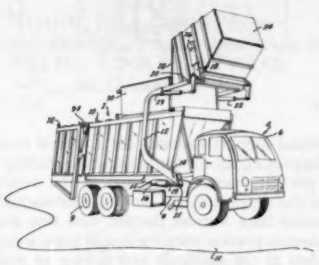
lever means pivotally mounted on said storage body;

said motor means connected to said lever means and to said tailgate;

a keeper member secured to said tailgate;

a latching member pivotally mounted on said storage body;

said latching member being shaped and positioned to engage said keeper member when said tailgate is in a lowered



position in engagement with said storage body in locking said tailgate to said storage body;

means to transmit rotational movement of said lever means to said latching member, and

said lever member undergoing rotational movement on actuation of said motor means which rotational movement is transmitted to said latching member in moving the latching member out of engagement with said keeper member,

whereby actuation of said motor means to rotate said tailgate to a raised position first unlocks said tailgate from said storage body.

4,148,518

SPRUNG SEAT FOR ALL VEHICLES

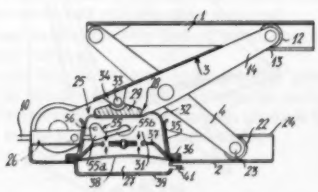
Jean Vilbeuf, Paris, France, assignor to Societe Sifra, Gien, France

Filed Apr. 22, 1977, Ser. No. 790,137

Claims priority, application France, Dec. 8, 1976, 76 36957

Int. Cl.[2] F16M *11/00*

U.S. Cl. 296—65 R **18 Claims**



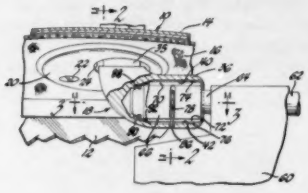
1. A seat, notably for wheel-mounted or crawler-track off-the-road vehicles such as farming tractors, public works equipments and military vehicles, which comprises an elastic suspension system mounted on a base frame and supporting a seat squab frame, with elastic return means, wherein said elastic return means comprises a hydropneumatic device associated with an automatic monitoring distributor integrated within said device, adapted to be coupled to the pressure-fluid circuit of the vehicle, and to automatically regulate the pressure in the hydropneumatic device in harmony with the oscillation of said seat squab frame, independently of driver's weight.

4,148,519

SUNSHADE SUPPORT ASSEMBLY

Arthur W. Hollar, Jr., Grosse Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 11, 1977, Ser. No. 850,615
Int. Cl.[2] B60J 3/00
U.S. Cl. 296—97 H **3 Claims**



1. A pivotal support assembly for a vehicle sunshade, comprising: support means for the sunshade including a vertically oriented portion operably attached to the vehicle, another portion of the support means having a substantially horizontally oriented bore formed therein, first slot means in said another support portion opening to said bore, a support means rod attached to the sunshade and having an end portion, a bushing member mold formed on the rod end portion permitting relative rotation therebetween, means between said rod end portion and bushing preventing axial movement therebetween, said bushing with the rod end portion therein extending into said bore to mount the sunshade, means between the another support means portion and the bushing member preventing relative rotation therebetween, second slot means in said bushing member aligned with said first slot means when the bushing member is fully inserted in said bore, and retainer means including a leg portion extending into said aligned slot means to axially hold the bushing member in said bore.

4,148,520

PIECE OF FURNITURE

Ross M. Miller, 514 E. First St., Moscow, Id. 83843

Filed Feb. 4, 1977, Ser. No. 765,823
Int. Cl.[2] A47B 4/00
U.S. Cl. 297—16 **7 Claims**

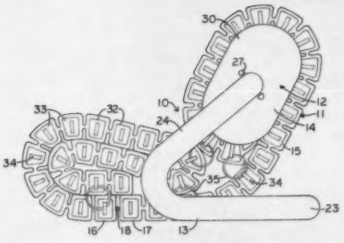
1. An erectable chair, comprising four columnar support members each having respective upper and lower end portions, a first pair of said four columnar support members being upright and extending parallel to one another in transversely spaced relationship, a second pair of said four columnar support members being inclined to the horizontal and crossing each other substantially midway between said upper and lower end portions thereof and intermediately said columnar support members of said first pair, each end portion of each of said support member being spaced from each end portion of each other one of said support members; means for forming a support surface at least between said upper end portions of said four columnar support members and being connected to said upper end portion of the support member of said first and said second pair respectively; and a plurality of tension members connecting the end portions of each of said columnar support members with the respective end portions of at least two other of said support members to maintain all of said support members in a desired position in which said support members of said first pair extending upright and parallel to each other and said support members of said second pair are inclined to the horizontal and cross each other substantially intermediate said support member of said first pair, said tension members being stressed to a tension-transmitting state when a weight rests upon said support surface of the erected chair whereby said columnar support members become fixed in said desired position.

4,148,521

NOVEL CONVERTIBLE FURNITURE CONSTRUCTION

Donald Van Hook, 250 W. 99th St., New York, N.Y. 10025

Filed Jun. 2, 1977, Ser. No. 802,663
Int. Cl.[2] A47C 13/00
U.S. Cl. 297—118 **8 Claims**



1. A construction for a piece of furniture convertible into sleeping or resting or sitting positions comprising a web and a web support structure, said web support structure including a spindle, said spindle including a pair of elongated sides and means to cross brace said sides, said cross bracing means along the length of said sides, said spindle adapted to receive said web thereabout, said support structure including a stanchion, said stanchion including means to support itself and means to support said spindle in fixed position, means to select other fixed positions of said spindle with regard to said spindle support means, said web including a portion attachable to said spindle, said web including a sheath portion, said sheath portion including means to support bulk, and said web including means to interhold selected portions of said web in selected positions.

4,148,522

SEAT BACKREST WITH ADJUSTABLE LUMBAR SUPPORTER

Kenichi Sakurada, Yokohama, and Takaichi Nishino, Hachioji, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Tachikawa Spring Company, Limited, Akishima, both of, Japan

Filed May 9, 1978, Ser. No. 904,231
Claims priority, application Japan, May 25, 1977, 52-61325
Int. Cl.[2] A47C 3/00, 7/46
U.S. Cl. 297—284 **12 Claims**

1. A seat backrest having two parallel but spaced frame members by which a contourable portion constituted by padding means is supported, and a lumbar supporter for imparting a curvature to said contourable portion to produce a desired contour, said lumbar supporter comprising:

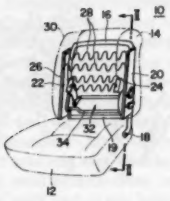
a rod transversely crossing said frame members so as to be

rotatable about the axis thereof relative to said frame members;

an arm member secured at its one end portion to said rod so as to be located between said frame members;

a support member pivotally connected to said arm member;

lumbar pressing means connected to said support member;



first control means for permitting said support member to rotate about its pivoted connection relative to said arm member when operated; and

second control means for permitting said arm member and thus said rod to rotate about the axis of said rod relative to said frame members when operated.

4,148,523

FOLDING ADJUSTABLE WORK STOOL

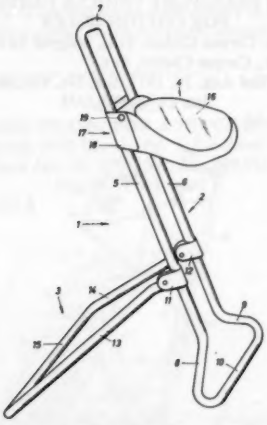
Peter Brand, Stuttgart; Guenther Haefner, Hochdorf; Fritz Diedrich, Bad Essen, and Hans Kirchmann, Düren-Arnoldsweiler, all of Fed. Rep. of Germany, assignors to Heinrich Wilhelm Dreyer, Bad Essen, Fed. Rep. of Germany

Filed Apr. 27, 1977, Ser. No. 791,222

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1976, 2618292

Int. Cl.[2] A47C *5/10*

U.S. Cl. 297—55 **38 Claims**



1. A collapsible stool for resting on a floor having a closed frame and a seat vertically adjustably mounted on said frame, said frame includes a rearwardly slanting pair of first parallel supporting members rigidly connected to each other to form a closed frame for supporting a seat projecting forwardly from said pair of first supporting members at a first acute angle, said pair of first supporting members is supported relative to the floor by a brace extending downward and backward within a second acute angle from a rear side of said first supporting members, said brace comprises a pair of rigidly connected diverging brace members, said pair of brace members pivotally connected to said pair of first supporting members by means of a pair of hinges and being connected to each other at their bottom by a second cross-piece so that the brace is shaped as a trapezoid having an open top side parallel to and shorter than said second cross-piece, said closed frame formed by said first supporting members being of symmetric trapezoidal shape at its lower end and having a first cross-piece resting on the floor forming the base of the trapezoidal shape, said first cross-piece being longer than the distance between said parallel first supporting members, a pair of divergent slanting members connect said first cross-piece to said pair of first supporting members, thereby completing said closed frame.

4,148,524

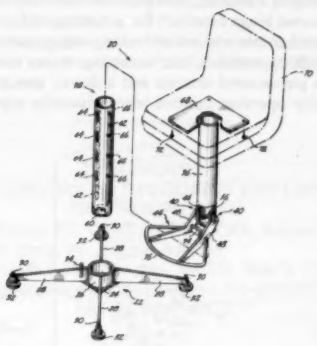
ADJUSTABLE HEIGHT SEAT

Floyd R. Guyton, 9365 NE. 120th, Kirkland, Wash. 98033

Filed May 8, 1978, Ser. No. 903,620

Int. Cl.[2] A47C *1/02*

U.S. Cl. 297—345 **12 Claims**



1. An improved adjustable height seat of the type having a device for supporting a person and a base, wherein the improvement comprises:

(a) a generally vertical, tubular outer column telescopically engaging a generally vertical, tubular inner column and selectively movable vertically with respect thereto, wherein the lower end of said inner column is affixed to said base and the upper end of said outer column is connected to said device for supporting a person;

(b) a rotatable footrest means, including a pivot means, wherein said pivot means is interconnected with said outer column;

(c) a first height adjusting locking means part carried by said footrest means and movable therewith; and

(d) a second height adjusting locking means part carried by said inner column;

wherein said first and second locking means parts are arranged to selectively engage and disengage each other by pivotal rotation of said footrest means, to adjust the height of said means for supporting a person.

4,148,525

HINGE FITTING FOR A SEAT AND BACKREST

Chusaku Yamanashi, Kosai, Japan, assignor to Fuji Kiko Babushiki Kaisha, Tokyo and Ikeda Bussan Kabushiki Kaisha, Yokohama, both of, Japan

Filed Nov. 7, 1977, Ser. No. 848,930

Claims priority, application Japan, Nov. 19, 1976, 51-155418[U]

Int. Cl.[2] A47C *1/025;* B60N *1/02*

U.S. Cl. 297—367 **9 Claims**

1. A hinge fitting for a seat having an adjustable backrest, comprising, in combination:

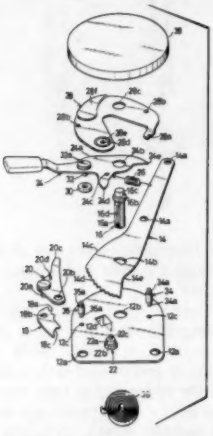
a first and a second hinge member adapted to be secured to one side of the seat and the backrest, respectively;

a pivot shaft for pivotably connecting said hinge members to each other,

locking means for locking said hinge members in a fixed position at different angles relative to each other, said locking means including a first and a second locking member normally meshing with each other in a plane, said first locking member being integral with one of said hinge members and having end teeth arranged in an arc of a circle which has its center coincident with the axis of said pivot shaft, said second locking member having teeth adapted to be meshed with said first locking member for locking said one of said hinge members to the other of said hinge members in any desired angular position and disengaged from said first locking member for allowing said one of said hinge members to pivot around said pivot shaft;

actuating means supporting thereon said second locking member pivoting at a first pivot point and supported pivotably at a second pivot point on said other of said first and second hinge members for actuating said second locking member into and out of locking engagement with said first locking member, said actuating means comprising a driven pin secured thereon and a driven arm portion;

a manually operated control lever pivotally supported on



said pivot shaft for driving said actuating means to disengage said second locking member from said first locking member, said control lever being normally biased so as to cause said actuating means to engage said first and second locking members, a roller rotatably supported on said control lever for pushing said driven arm portion and therefore said actuating means thereby to engage said first and second locking members when said control lever is normally biased;

restraining means overalapped onto said other of said hinge members in spaced relationship thereto and holding therebetween said locking members, said actuating means, and said control lever for restraining said locking members, said actuating means and said control lever from being disengaged or displaced at least partly from each other in one direction or the other perpendicular to the plane in which said locking members mesh with each other; and

said restraining means and said other of said hinge members having an overlapping extent large enough to prevent said control lever from being bent in the vicinity of said roller in the direction of the thickness of said control lever;

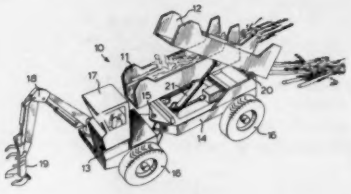
said restraining means having a conical protrusion which extends to an adjacent surface of said actuating means to fill a clearance space otherwise formed between said actuating means and said restaining means.

4,148,526

APPARATUS FOR SORTING TREES

John Kurelek, Brantford, Canada, assignor to Koehring Canada Limited, Brantford, Canada

Filed Jan. 13, 1978, Ser. No. 869,281
Int. Cl.[2] B60P *1/28*
U.S. Cl. 298—8 R **6 Claims**



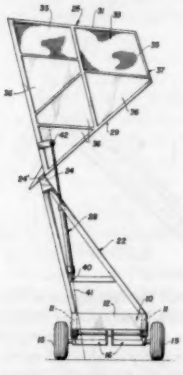
1. Apparatus for receiving trees that have been sorted according to different physical characteristics comprising a mobile vehicle including a frame having a front, a rear and two sides, said vehicle including at least four bunks adapted to receive trees and mounted on said frame in side-by-side relationship with a first and a second of said bunks being located adjacent respective sides of said frame and third and fourth of said bunks being located between said first and second bunks, said first and second bunks being movably mounted on said frame and constructed and arranged to dump their contents to the sides of said frame, said third and fourth bunks being movably mounted on said frame and constructed and arranged to dump their contents to the rear of said frame, and means for independently moving each of said bunks between a first position where trees can be loaded into and retained in said bunks and a second position where trees in said bunks will be dumped therefrom.

4,148,527

DUMPING TRANSPORT VEHICLE PARTICULARLY FOR COTTON BOLLS

Billy S. Steele, Corpus Christi, Tex., assignor to E. L. Caldwell & Sons, Inc., Corpus Christi, Tex.

Filed Aug. 26, 1977, Ser. No. 828,246
Int. Cl.[2] B60P *1/16*
U.S. Cl. 298—10 **1 Claim**



1. A transport and side dumping vehicle for picked or stripped cotton comprising a wheeled horizontal low elevation comparatively massive bed frame, spaced upstanding end frames fixed on the bed frame adjacent to its ends and comprised of upwardly converging members which are inclined toward one side of the bed frame and extend considerably laterally outwardly of one side of the bed frame at the tops of said end frames, the tops of said end frames defining dump

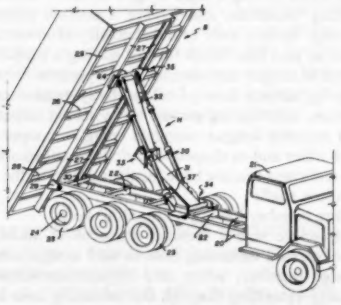
basket pivots which are positioned a substantial lateral distance outside of the adjacent wheels of the bed frame, an open top transport and dump basket for cotton bolls having downwardly converging sloping side walls longitudinally of the vehicle, end walls near and inwardly of the end frames and a comparatively narrow flat bottom wall which is offset laterally toward the side of the bed frame away from said basket pivots when the bottom wall of said basket is substantially resting on the horizontal bed frame, the arrangement being such that the sloping side wall of said basket nearest to said basket pivots is disposed in an inclined plane intersecting the common axis of said pivots and also intersecting a center vertical plane through the horizontal bed frame at the point where such vertical plane intersects a horizontal plane through the wheel axes of the vehicle, the bottom wall of said basket and the two end walls thereof including foraminous air breathing panels, and the air breathing panels of said end walls being located adjacent the sloping basket side wall remote from said basket pivots, the remaining areas of said end walls being solid, a horizontal longitudinal pivot shaft carried by one basket side wall and being rotationally engaged with said basket pivots of the end frames, and a pair of simultaneously acting basket raising and lowering cylinders immediately inwardly of the end frames and between the end frames and the basket end walls, the lower ends of said cylinders being pivotally connected to said end frames substantially below the tops of the end frames defining said pivots and comparatively nearer but above the elevation of the bed frame, said last-named pivotal connections of said cylinders with the end frames being nearly vertically aligned with the adjacent longitudinal side of the bed frame, the upper rod ends of the cylinders being pivotally connected with the basket close to the top of the basket and near but somewhat laterally inwardly of and somewhat below said basket pivots, the locations of said cylinder axes being such that when the basket is elevated by the clyinders to a full dumping position a plane defining the open top of the basket is substantially parallel to the inclined side members of the end frames nearest the basket pivots and another plane through the axes of the cylinders and through their upper and lower connections with the basket and end frames intersects a horizontal plane at the top of the bed frame immediately inwardly of the longitudinal side member of the bed frame nearest to the basket pivots.

4,148,528

SCISSOR FRAME FOR A TRUCK HOIST

Glenn L. Channell, 3739 County Rd. 7, Loveland, Colo. 80537

Filed Jan. 16, 1978, Ser. No. 869,916
Int. Cl.[2] B60P *1/20*
U.S. Cl. 298—22 J **9 Claims**



1. In combination with a dump body mounted upon the frame of a truck or the like, wherein the frame includes a pair of longitudinal frame members and cross members therebetween and the dump body includes a pair of base beams supporting the understructure of the dump body spaced to lie upon the longitudinal frame members of the truck; a scissor frame to stabilize the dump body as it is lifted and tilted including: a lower leg, an upper leg a single transverse elbow pivot interconnecting one end of each leg, a saddle pivot mounted upon the truck frame and connecting with the other end of the lower leg, and a support pivot mounted upon the dump body and connecting with the other end of the upper leg, and wherein:

(a) each leg is a single rigid, rectangular torsion-resisting tube having a cross sectional width such as to permit it to lie in the space between the dump body base beams and a cross sectional height such as to permit both legs to lie, the upper upon the lower, in the space between the truck frame cross members and the dump body understructure when the dump body rests upon the truck frame;

(b) the elbow pivot is offset from the legs to permit the upper leg to lie upon the lower leg and is a single member extended substantially across the width of the legs and includes a pintle portion secured to opposite sides of one leg and a pivot tube portion about the pintle portion secured to the other leg; and

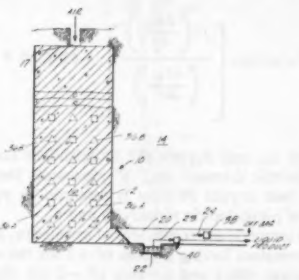
(c) an actuating means to raise and lower the dump body from and to the rest position of the dump body upon the truck frame.

4,148,529

DOPING A RETORT TO DETERMINE THE LOCUS OF A PROCESSING ZONE

Robert S. Burton, III, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction

Continuation-in-part of Ser. No. 798,376, May 9, 1977. This application Jan. 16, 1978, Ser. No. 869,668
Int. Cl.[2] E21C *41/10*
U.S. Cl. 299—1 **34 Claims**



32. A method for determining the locus of a processing zone advancing through a fragmented permeable mass of particles in an in situ oil shale retort in a subterranean formation containing oil shale, the retort having an effluent fluid produced therein and withdrawn therefrom, the method comprising the steps of:

(a) placing at a selected location within the boundaries of a retort to be formed in the formation, indicator means for providing an indicator, wherein such an indicator providing means provides indicator at a predetermined temperature greater than ambient;

(b) subsequently explosively expanding formation to form an in situ oil shale retort containing a fragmented permeable mass of particles containing oil shale and the indicator providing means;

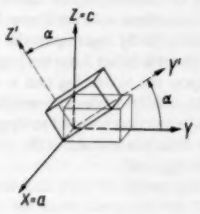
(c) advancing a processing zone through the fragmented mass to produce such an effluent fluid which is withdrawn from the retort and to provide indicator from the indicator providing means at such predetermined temperature; and

(d) monitoring effluent fluid from the retort for presence of such an indicator.

4,148,530
CUT ANGLES FOR PIEZOELECTRIC QUARTZ CRYSTAL ELEMENTS

Reto Calderara, Bern, Switzerland, assignor to Kistler Instrumente AG, Switzerland

Continuation of Ser. No. 234,702, Mar. 15, 1972, abandoned.
This application Jun. 10, 1977, Ser. No. 805,468
Claims priority, application Switzerland, Mar. 15, 1971, 3757/71
Int. Cl.² H01L 41/18
U.S. Cl. 310—361 10 Claims



1. A piezoelectric crystal element for use in force and pressure transducers and accelerometers converting forces, pressures, torques and accelerations into electrical signals such that the temperature dependence of at least one of the transverse and antiaxial shear sensitivity coefficients is considerably reduced over a predetermined temperature interval, as compared to the longitudinal piezoelectric coefficient,

said element comprising a member of monocrystalline material of symmetry class 32, having two force introduction surfaces essentially parallel to a crystallographic 'a'-axis but inclined with respect to the 'c'-axis so as to intersect the latter at an orientation angle

$$\alpha = \arctan\left[\frac{f\cdot\left(\frac{\delta d_{11}}{\delta\theta}\right)}{\left(\frac{\delta d_{14}}{\delta\theta}\right)}\right];\ -63°\ \text{C.} \leqq \theta \leqq +450°\ \text{C.}$$

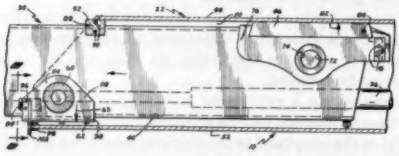
wherein d_{11} and d_{14} are the independent coefficients of the piezoelectric d-tensor, and 'θ' represents the temperature at which said crystal element is required to yield a maximum value of piezoelectric sensitivity and a

zero temperature coefficient of sensitivity, and wherein 'f' is a constant having a value of +1 for the transverse piezoelectric effect and a value of −2 for the antiaxial shear piezoeffect.

4,148,531
SELF-ALIGNING SLIDE PADS FOR TELESCOPIC BOOM

John T. Hornagold, Waukesha, Wis., assignor to American Hoist & Derrick Company, St. Paul, Minn.

Filed Aug. 15, 1977, Ser. No. 815,703
Int. Cl.² F16C 17/00; B66C 23/00
U.S. Cl. 308—3 R 16 Claims



1. In a telescopic boom mounted at its inward end on a boom carrier and having at least an outwardly extending inside boom section slidably mounted inside of an inwardly extending outside boom section, said sections each including a pair of spaced apart upright side panels and a bottom panel and a cap panel joining the bottom and top edges of the side panels, respectively, each of the panels of each section lying in spaced relation to the corresponding panel of its adjacent section when the boom is retracted, and power means for telescoping the sections with respect to each other;

a slide pad boom section mounting structure including:

A. a pair of rear reaction slide pads;

B. means entirely between adjacent surfaces of the side panels of said inside boom section and said outside boom section for pivotally supporting one of said rear reaction slide pads on a rear portion of each of said inside boom section side panels to lie in sliding and supported relation to said cap panel of said outside boom section;

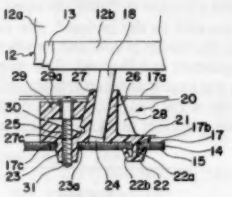
C. a pair of front reaction slide pads; and

D. means between side panels and bottom panels of said inside boom section and said outside boom section for pivotally supporting said front reaction slide pads on front portions of said outside boom section side panels adjacent said inside boom section side panels to lie in sliding and supporting relation to the inside boom section bottom panel.

4,148,532
ADJUSTABLE SHAFT BEARING STRUCTURE

Akira Inabayashi, Aki, and Harumi Ninomiya, Kure, both of Japan, assignors to Toyo Kogyo Co., Ltd., Aki, Japan

Filed Feb. 14, 1978, Ser. No. 877,814
Claims priority, application Japan, Feb. 19, 1977, 52-17405
Int. Cl.² F16C 17/00
U.S. Cl. 308—36 11 Claims



1. A friction bearing structure adapted to be installed on an access door of an automotive vehicle of a type having an open-topped groove of substantially U-shaped cross section for the adjustable support of a ventilator window shaft, which comprises, in combination:

a base block having a rigid tongue member outwardly protruding therefrom and having a portion formed into a bearing surface area of substantially semi-circular cross section, said base block further having a support hole;

a movable tongue member having a portion formed into a bearing surface area of substantially semi-circular cross section, said bearing surface areas in said respective rigid and movable tongue members being so cooperative with each other and so shaped as to define a substantially circular-sectioned bearing bore for the support of the ventilator window shaft;

a wedge member having a mounting hole;

an adjustable screw member adapted to loosely extend through said mounting hole in said wedge member, said wedge member, when said adjustment screw member loosely extending through the mounting hole is threaded into said support hole in the base block, applying a biasing force to said movable tongue member to shift the latter towards the rigid tongue member whereby the ventilator window shaft frictionally contacts the respective bearing surface areas of the rigid and movable tongue members; and

means for backing a pressure, exerted by the wedge member

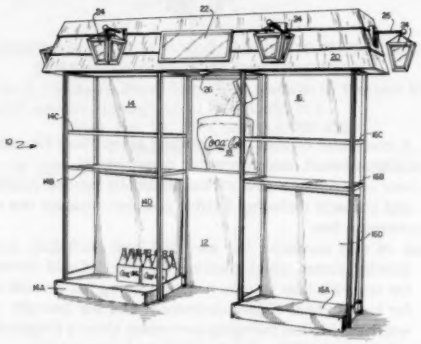
when the latter is held in position to apply the biasing force to the movable tongue member, so that the pressure can be directed towards the movable tongue.

4,148,533

DISPLAY RACK FOR PACKAGED AND DISPENSABLE BEVERAGES

Rafael T. Bustos, Clarkston; William B. Taylor, Chamblee; Charles L. Davis, and Lawrence G. Kern, both of Atlanta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Feb. 16, 1977, Ser. No. 769,363
Int. Cl.[2] A47B *77/00*
U.S. Cl. 312—223 **17 Claims**



1. A display rack for displaying packaged beverages, dispensable chilled beverages, and advertising material for said beverages at a common location comprising:

an upstanding frame structure defining a first display section for housing a chilled beverage dispenser and at least one additional display section adjacent said first section for storing and displaying packaged beverages;

advertisng display means depicting the beverage offered for sale in said first section;

a plurality of shelves for supporting said packaged beverages in said at least one additional section;

canopy means disposed over and about the top of said upstanding frame structure for holding said upstanding frame structure together, said canopy means including a canopy frame with an open top and an open bottom to facilitate the transmission of ambient light from above the open top along an optical path through said canopy means and out the open bottom, said canopy means supporting a diffuser means for said ambient light in said optical path, said canopy frame being so shaped as to have substantially no portions in the optical path between said open top said diffuser means, and said open bottom.

4,148,534

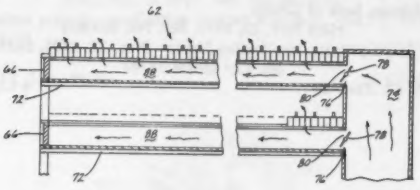
ELECTRICAL RESISTOR TESTING CHAMBER

John C. Veburg, Columbus, Nebr., assignor to Dale Electronics, Inc., Columbus, Nebr.

Filed May 9, 1977, Ser. No. 795,136
Int. Cl.[2] A47B *77/08*; G01R *31/00*
U.S. Cl. 312—236 **10 Claims**

1. A testing chamber for testing electrical components comprising,

at least one drawer having means for supporting electrical components said drawer having a top portion with slots therein to allow air flow, a first plenum beneath said slots, and an air inlet to said first plenum at one end of said drawer to receive air flow, a support structure to support



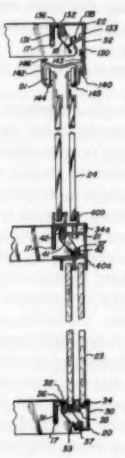
said drawers, and means to provide uniform velocity, non-direct air impingement to said electrical components.

4,148,535

MODULAR DISPLAY CASES

Jay G. Fenwick, Albert Lea, Minn., assignor to Litton Business Systems, Inc., Beverly Hills, Calif.

Filed Mar. 7, 1977, Ser. No. 774,835
Int. Cl.[2] A47B *47/00, 95/00*
U.S. Cl. 312—304 **2 Claims**



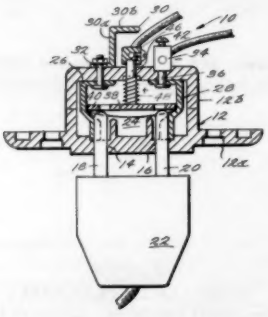
1. A display case comprising first and second shelves including bracket means for attaching said shelves to wall standards, said first shelf forming the bottom surface of said case, said second shelf forming the top surface of said case, said first and second shelves each including a vertically aligned slot adjacent the front face thereof; first mounting means removeably attached to said first shelf through attaching engagement of a portion of said mounting means with said slot, said first mounting means including a pair of parallel tracks for receiving first and second door panels; second mounting means removeably attached to said second shelf through attaching engagement of a portion of said mounting means with said slot, said second mounting means including channel means for receiving removable track means, said track means adapted to engage said first and second door panels, and side panel means adapted for attachment to said shelves.

4,148,536

SAFETY ELECTRICAL RECEPTACLE

Nikolaostzakos J. Petropoulsos, 7, Cazanova St., Piraeus, and George D. Carvouniaris, 2, Terpsihoris St., Neo Eraclion, Athens, both of Greece

Filed Nov. 22, 1977, Ser. No. 853,881
Claims priority, application Greece, Nov. 22, 1976, 56353
Int. Cl.[2] H01R *13/44*
U.S. Cl. 339—42 4 Claims



1. A selectively energized receptacle for receiving an electric plug, and providing electrical connections between the contact fingers of said plug and the respective conductors of a power line comprising:

a frame, having apertures therein for admitting said plug contact fingers;

first and second electrical contacts, respectively non-conductively affixed to said frame, and disposed with respect to said frame apertures to electrically contact respective ones of said plug contact fingers admitted therethrough;

a first electrical connector, electrically coupled to one of said electrical contacts, adapted for electrical coupling to a first of said power line conductors;

a contact arm, non-conductively affixed to said frame and electrically connected to said second contact, said contact arm being disposed rearwardly of said frame apertures;

an insulative member, moveably attached to said frame, interposed between said apertures and said contact arm;

said insulative member being generally T-shaped, having a cross-bar portion and a central leg portion, said crossbar portion being disposed towards said frame apertures and adapted to cooperate with said plug contact fingers, said central leg portion being disposed towards said contact arm;

a second electrical connector, adapted for coupling to a second power line conductor, said second connector being affixed to the end of said insulative member central leg portion;

said insulative member being disposed to cooperate with said plug contact fingers such that admission of said contact fingers through said frame apertures moves said insulative member to place said second connector into contact with said contact arm to thereby establish said connection between said second power line conductor and said respective plug contact finger; and

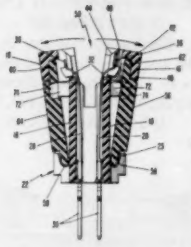
a spring cooperating with said insulative member and said frame, for biasing said insulative member to a position such that said second connector is out of contact with said contact arm, whereby said receptacle is unenergized in the absence of admitted plug contact fingers.

4,148,537

ZERO INSERTION FORCE CONNECTOR FOR PRINTED CIRCUIT BOARDS

Jerzy R. Sochor, Redondo Beach, Calif., assignor to Elco Corporation, Willow Grove, Pa.

Filed Jan. 3, 1978, Ser. No. 866,419
Int. Cl.[2] H01R *13/62;* H05K *1/07*
U.S. Cl. 339—74 R 18 Claims



1. A connector of the type including an aperture for receiving a circuit board, said connector comprising:

a base containing a row of longitudinally spaced contacts, said contacts including flexible portions adjacent one end;

a camming bar;

one of said camming bar and said base including socket forming means which receives the other of said camming bar and said base to mount the camming bar on said base for longitudinal sliding movement and for laterally outward and inward swinging movement about a longitudinal axis located adjacent one end of said camming bar;

a contact actuating member mounted on another end of said camming bar, said contact actuating member having one end engageable with said contacts and another end terminating short of said socket forming means;

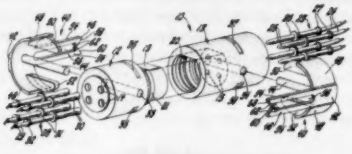
said base and said camming bar including cam means responsive to longitudinal sliding movement of said camming bar for swining said camming bar and said contact-actuating member about said longitudinal axis so that said flexible portions of said contacts are displaced away from the aperture to facilitate entry or removal of a circuit board.

4,148,538

ELASTOMERIC ELECTRICAL CONNECTOR

Andrew F. Rodondi, Sharpsville, Pa., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 30, 1978, Ser. No. 891,513
Int. Cl.[2] H01R *13/54*
U.S. Cl. 339—91 R 3 Claims



1. In an electrical connector, the combination comprising:

an elastomeric connector body having a generally longitudinal open-ended terminal cavity extending therethrough, and a transverse passage extending therethrough to provide a flexible wall partly defining the longitudinal open-ended terminal cavity, said flexible wall having a locking shoulder for retaining a terminal in the longitudinal cavity, and

a hard plastic lock member having a base portion, a lock pin extending transversely from the base portion, and a latch

arm extending generally longitudinally from the base portion,

said lock pin being disposed in the transverse passage of the connector body to rigidify the flexible wall carrying the locking shoulder to provide a terminal lock, said lock pin protruding outwardly of the transverse passage at an end opposite the base portion to provide a lock nib, and

said latch arm projecting longitudinally of the connector body for latching engagement with a lock nib of a matable electrical connector.

4,148,539

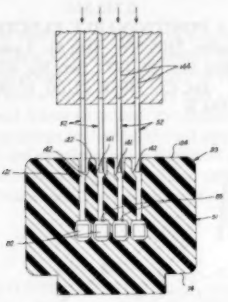
MODULAR PLUG HAVING SUPERIOR DIELECTRIC STRENGTH FOR TERMINATING CORDS

Edwin C. Hardesty, Perry Hall, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Apr. 29, 1977, Ser. No. 792,433

Int. Cl.[2] H01R *13/38*

U.S. Cl. 339—99 R **19 Claims**



1. A device for making electrical connections between components external to the device and conductors of a cord, which comprises:

a dielectric housing comprising a plurality of conductor-receiving channels with centers spaced apart a first distance, and a plurality of associated terminal-receiving slots with centers aligned with those of the channels and spaced apart said first distance, said slots communicating with the channels and with an exterior surface of the device through openings which at the exterior surface have centers spaced apart a second distance that is less than said first distance, each said opening being defined by at least one camming surface, which is effective to reorient a terminal inserted into the opening such that the terminal will be seated within the associated slot and channel along the aligned centers thereof to engage a conductor in the channel; and

an electrically conductive terminal seated within each of the terminal-receiving slots, said terminal having an internal contact portion extending into the associated channel for piercing the insulation of and making electrical engagement with a conductor in the channel, having an external contact portion for making electrical engagement with a component external to the housing to establish an electrical connection between the component and the conductor, and having oppositely disposed edge portions in compressive engagement with walls of the housing which define the terminal-receiving slot to support the terminal against unintended movement.

4,148,540

ELECTRICAL COUPLING DEVICES

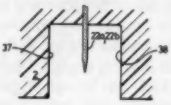
Derek Hayes, Beckford Farm, St. Peter South, Elmham, Bungay, Suffolk NR35 INQ, England

Filed Dec. 5, 1977, Ser. No. 857,610

Claims priority, application United Kingdom, Oct. 9, 1975, 41489/75

Int. Cl.[2] H01R *13/38*

U.S. Cl. 339—99 R **22 Claims**



1. An electrical coupling device, comprising:

a body portion comprising an electrically-insulating part having a recess in its surface, and electrically conductive metallic piercing means extending from the bottom of said recess outwardly toward its piercing end generally along the direction of the adjacent sides of said recess but laterally spaced therefrom;

conductor-locating means comprising a pair of cooperating jaws movable relative to each other and having first mutually confronting surfaces intermediate first and second ends of the jaws configured to receive between them an insulated electrical conductor and to grasp said conductor when said jaws are urged together, at least part of the opposed outer surfaces of said pair of jaws being configured to fit slidably into said recess, and guiding means incorporated in said jaws for receiving said piercing means and for slidably contacting and guiding said piercing means through said jaws and into the center of said conductor when said first end of said jaws is inserted in and advanced into said recess, said guiding means comprising second mutually confronting surfaces of said jaws extending between said first confronting surfaces of said jaws and said first end of said jaws and aligned with said piercing means when said first end of said jaws is advanced into said recess, whereby said piercing means is guided between said second confronting surfaces into operative position with the piercing means piercing the center of said conductor;

the outer surfaces of said pair of jaws and the inner surfaces of said recess being configured to produce a camming action such that inserting and advancing said jaws into said recess urges said jaws together to grasp said conductor prior to the piercing of the insulation on said conductor and during piercing of said conductor by said piercing means, and such that said jaws are thereafter releasably retained in said recess.

4,148,541

INTERLOCKING ELECTRON TUBE BASE AND ADAPTER

Bruce G. Marks, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

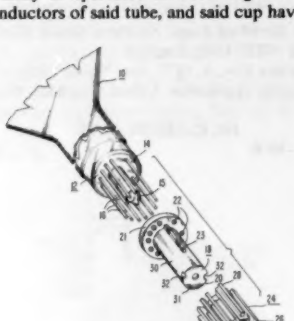
Continuation-in-part of Ser. No. 838,717, Oct. 3, 1977, abandoned. This application Dec. 12, 1977, Ser. No. 859,857

Int. Cl.[2] H01R *13/48*

U.S. Cl. 339—144 T **8 Claims**

1. A wafer base for an electron tube comprising a hollow cylindrical tubulation protector cup and a flange extending radially outwardly from the open end of the cup, said flange

having an array of apertures for receiving therethrough an array of conductors of said tube, and said cup having a pair of



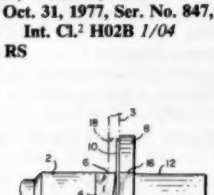
openings in the cylindrical wall thereof for receiving therein a pair of mating fingers of a base conversion adapter.

4,148,542

PANEL MOUNTED LOCKING DEVICE FOR COMPONENTS

Theodore H. Wood, Brewster, Mass., assignor to Alden Research Foundation, Westboro, Mass.

Filed Oct. 31, 1977, Ser. No. 847,163
Int. Cl.[2] H02B *1/04*
U.S. Cl. 339—126 RS **10 Claims**



1. A locking mechanism for attachment of a component to a panel having an aperture with a transverse dimension narrower than the elongate dimension, the mechanism comprising: a mount with one end dimensioned to pass through said aperture; an enlarged backing surface for engaging one face of the panel and for preventing the other end of said mount from passing through said aperture; a boss disposed on the backing surface and adapted to seat within the aperture to prevent rotational movement; clamping means extending outwardly from said mount, the clamping means being spaced from the backing surface by approximately the thickness of the panel and bridging the transverse dimension of the aperture upon rotation of the mount and bearing on the other face of the panel to lock the device thereto.

4,148,543

SUPPRESSOR FOR ELECTROMAGNETIC INTERFERENCE

Marvin W. Shores, Pomona, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

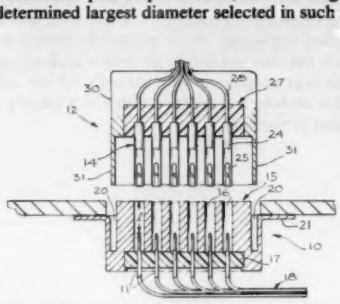
Filed Apr. 28, 1978, Ser. No. 901,368
Int. Cl.[2] H01R *3/06;* **H04B** *3/28;* **H05K** *9/00*
U.S. Cl. 339—143 R **9 Claims**

1. An electrical connector comprising means for suppressing electromagnetic interference after the pin sockets are removed from the collector assembly, said connector comprising:

(a) a plurality of connector pins;

(b) a plurality of pin sockets for interconnecting each of said pins; and

(c) an electrically conductive housing surrounding each of said connector pins or pin sockets, said housing having a predetermined largest diameter selected in such a manner



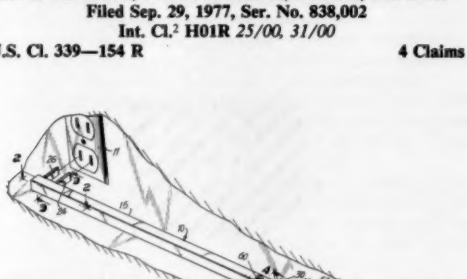
that the housing surrounding each of said connector pins or pin sockets operates as an electromagnetic waveguide having an upper cutoff frequency which is beyond the highest expected frequency of electromagnetic interference.

4,148,544

ADJUSTABLY POSITIONABLE ELECTRICAL OUTLET

Isral J. Markowitz, 7105 NW. 84th St., Lamarac, Fla. 33319

Filed Sep. 29, 1977, Ser. No. 838,002
Int. Cl.[2] H01R *25/00, 31/00*
U.S. Cl. 339—154 R **4 Claims**



1. An electrical outlet for use along a wall surface comprising a pair of telescopically extensile and retractile elongate members wherein one of which is receivable in the other of said elongate members, said elongate members having proximate engaging ends in overlapping engagement and distal non-engaging ends remote from each other, a first pair of longitudinally extending conductors carried by one of said elongate members, a pair of conductive wipers carried by the other of said elongate members adjacent to its engaging end in contact with said first pair of conductors for wiping engagement with the latter upon telescopic movement of said elongate members, additional conductors carried by said other elongate member electrically connected to said pair of wipers and extending toward said non-engaging end of said other elongate member, a plug for engagement in a receptacle, and a socket for receiving a connector, said plug and socket being carried by said non-engaging ends and electrically connected to adjacent conductors; said first pair of conductors being internally of said one elongate member, and said pair of wipers being exposed externally of said other elongate member for said wiping engagement; whereby when said plug of said electrical outlet is inserted into an existing electrical wall out-

let, said wall outlet in effect becomes adjustably positionable within a predetermined distance from said wall outlet by the selective telescopic extensile and retractile movement of said elongate members parallel to said wall surface containing said wall outlet.

4,148,545

CONNECTION ELEMENT FOR ELECTRIC CABLE CONNECTIONS

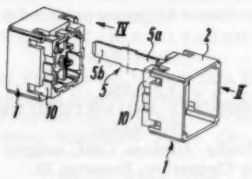
Walter Kies, Ditzingen, Fed. Rep. of Germany, assignor to Eckardt AG, Fed. Rep. of Germany

Filed Jun. 3, 1977, Ser. No. 793,248

Claims priority, application Fed. Rep. of Germany, May 18, 1976, 2621978

Int. Cl.[2] H01R *13/64*

U.S. Cl. 339—184 M **12 Claims**



1. In a connection element for electrical connections of the type comprising a frame structure, a plurality of guide openings in said frame structure, and a plurality of contact plates, each being inserted into a respective one of said guide openings to be mounted in said frame structure, the improvement comprising said guide openings including slotted openings with at least one of said slotted openings having mutually perpendicular grooves to selectively arrange one of said contact plates in one of two perpendicular positions in accordance with a preselected coding.

4,148,546

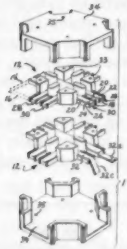
ELECTRICAL POWER DISTRIBUTION ASSEMBLY

Lester E. Wilson, Jr., Short St., Bedford, Mass. 01730, and Stephen A. Machcinski, 228 Cottage Park Rd., Winthrop, Mass. 02152

Filed Apr. 4, 1978, Ser. No. 893,398

Int. Cl.[2] H01R *13/10*

U.S. Cl. 339—192 R **2 Claims**



1. An electrical power distribution assembly comprising:

(1) a electrically insulating, electrical contact deck means having:

(a) first and second, spaced generally planar surfaces;

(b) means defining a peripheral edge between said surfaces;

(c) means defining at least two electrical contact channels in the first surface and at least two congruent electrical contact channels in the second surface, said contact channels each extending from one location on the peripheral edge to at least one other location on the peripheral edge;

(2) a first electrical contact positioned within one of said contact channels in the first surface and extending between said one peripheral edge location and the other location, said electrical contact having a portion thereof extending around the peripheral edge of the first deck means at each location and into the congruent channel in the second surface along only a portion thereof; and,

(3) a second electrical contact positioned within the second surface channel that is congruent to the other of said first surface contact channels, said second electrical contact extending between said one peripheral edge location and the other location and having a portion thereof extending around the peripheral edge of the deck means at each location and into said other first surface channel along only a portion thereof.

4,148,547

FEMALE ELECTRICAL CONTACT

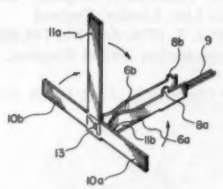
Tomonari Otsuki; Akio Yamada, both of Tokyo; Yoshiaki Igarashi, Ichikawa, and Hiromasa Inouye, Musashino, all of Japan, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 711,755, Aug. 4, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 847,356

Claims priority, application Japan, Aug. 6, 1975, 50-108095[U]

Int. Cl.[2] H01R *13/12*

U.S. Cl. 339—258 R **7 Claims**



1. A single piece female electrical contact comprising:

a U-shaped contact base having a pair of flat parallel opposing legs and a flat connecting bridge portion;

a pair of opposing contact leaves integral with said base and extending generally parallel to one another from respective opposed edges of said opposing legs, said contact leaves having inwardly bent portions for capturing a male pin inserted therebetween; and

a tubular member of generally rectangular cross section enclosing said pair of leaves and including a pair of opposing generally rectangular side members substantially in the respective planes of said pair of opposing contact leaves and bearing against the outer surfaces of said contact leaves for biasing said leaves toward each other; a third generally rectangular side member extending to and joining integrally with said flat connecting bridge portion in a common plane; a fourth generally rectangular side member disposed opposite said third side member and extending to and between the edges of said opposing legs; and means integral with said opposing legs for retaining said fourth side member in a relative fixed position; and further including a closed end and an open end, said closed end having an aperture therethrough leading to and between the free ends of said pair of opposing leaves.

4,148,548

TEMPERATURE COMPENSATING FOCUSING IN INFRARED ZOOM LENSES

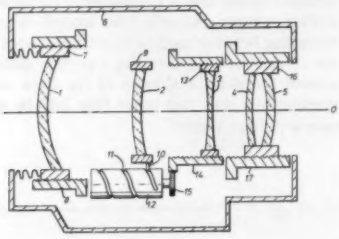
George V. Thompson, Denbigh, Wales, assignor to Pilkington P.E. Limited, St. Helens, England

Filed Sep. 19, 1977, Ser. No. 834,523

Claims priority, application United Kingdom, Oct. 2, 1976, 40991/76

Int. Cl.[2] G02B *15/18, 15/04*

U.S. Cl. 350—1.3 13 Claims



1. An infra-red lens of variable focus or magnification having a front part, a rear part, and a middle part which is adapted to provide different focal length or magnification settings, in which both the front and rear parts are adjustable axially relative to each other and to the middle part to assist in overcoming the defocussing effect of temperature variations, the front and rear parts being held stationary when a focussed image of an object is formed in a desired image plane.

4,148,549

DIFFRACTION GRATINGS

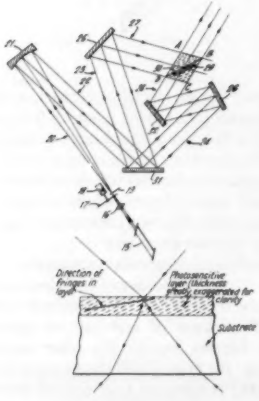
Alexander Termanis, Canterbury, England, assignor to The Rank Organisation Ltd., London, England

Filed Dec. 8, 1976, Ser. No. 748,409

Claims priority, application United Kingdom, Dec. 8, 1975, 50270/75

Int. Cl.[2] G03H *1/06, 1/32;* G02B *27/38*

U.S. Cl. 350—3.70 13 Claims



1. In a method of producing a blazed diffraction grating by making a photographic record of the interference fringes produced at the intersection of two coherent secondary light beams derived from a common coherent primary beam, and comprising the known steps of:

passing said common coherent primary light beam through a rotating diffuser whereby to reduce the spatial coherence of said primary beam,

splitting said primary beam to form said two secondary light beams,

directing said two secondary light beams along respective different paths and causing them to intersect at a given region,

locating a photographically sensitive surface in a selected plane in the said given region of intersection of said two secondary beams and exposing it to said two intersecting secondary beams to record interference fringes produced thereby, the improvement wherein:

the angles of incidence of said secondary beams with respect to said selected plane are different from one another, and

one of said secondary beams is laterally compressed or expanded in relation to the other by an amount dependent on the angle of intersection of said two secondary beams at said region of intersection such that both said secondary beams are in register across said selected plane in said region of intersection of said two secondary beams whereby interference fringes are produced at said selected plane.

4,148,550

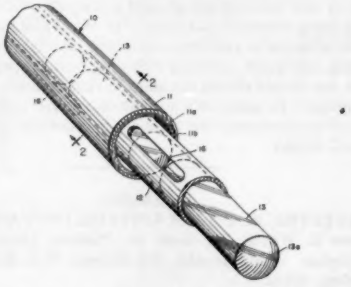
ROD LENS ASSEMBLY AND METHOD OF MAKING THE SAME

Richard B. MacAnally, Altadena, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed May 9, 1977, Ser. No. 795,404

Int. Cl.[2] G02B *23/16*

U.S. Cl. 350—54 21 Claims



1. A rod lens assembly comprising a flexible outer tube, an inner tube disposed within said outer tube having at least the major area of its outer surface spaced from the inner surface of said outer tube, and a series of cylindrical rod lenses disposed in longitudinal alignment within said inner tube, said lenses having their cylindrical surface portions secured to the inside surface of said inner tube and having their end faces spaced from the opposing ends of adjacent lenses of said series, and a plurality of longitudinally-spaced slots in the side wall of said inner tube, each slot being disposed between adjacent lenses in said series and extending longitudinally in both axial directions beyond at least one of the opposing end faces of a pair of said adjacent lenses.

4,148,551

MODULAR ROD LENS ASSEMBLY AND METHOD OF MAKING THE SAME

Richard B. MacAnally, Altadena, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed May 9, 1977, Ser. No. 795,405

Int. Cl.[2] G02B *23/16*

U.S. Cl. 350—54 25 Claims

1. A module for a flexible rod lens assembly, said module comprising an elongated cylindrical glass rod lens having optical end faces and being secured in a protective sleeve, said sleeve including an intermediate portion in which said elongated rod lens is secured and end portions projecting axially

beyond said end faces, whereby, when a plurality of said modules are disposed in longitudinal alignment with the end portions thereof in abutting relation, said end portions of said

sleeves provide spacing means for precisely spacing the optical end faces of successive elements, said sleeve also including annular bearing means projecting outwardly therefrom for supporting said module within a flexible barrel.

4,148,552

MICROSCOPE ADAPTABLE TO VARIOUS OBSERVING METHODS

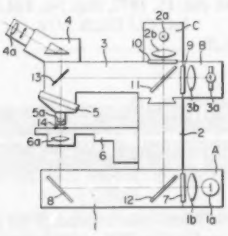
Hiroshi Suzuki, Fujisawa, and Megumu Shio, Kamakura, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 26, 1976, Ser. No. 735,522

Claims priority, application Japan, Oct. 28, 1975, 50-146054[U]

Int. Cl.² G02B *21/06*

U.S. Cl. 350—87 **14 Claims**



1. In a microscope comprising a base portion, a stand portion, an arm portion, an observing optical system and an objective optical system, each having a light path therethrough along an optical axis, one end of said arm portion connected with the observing optical system and with the objective optical system so that the light paths thereof cross each other, the opposite end of said arm portion being interchangeably connected with one end of said stand portion so that the optical axes thereof cross each other, and the opposite end of said stand portion being connected with one end of said base portion so that the optical axes thereof cross each other, the improvement comprising:

a first engaging means at said opposite end of said interchangeable arm portion and at an extension of the optical axis thereof;

first light source means having an engaging portion detachably connected to said first engaging means;

a first reflecting member at the crossing point of the optical axes of said arm portion and of said stand portion for guiding the light from said first light source means, and means for removably mounting said first reflecting member;

a second reflecting member at the crossing point of the optical axes of said stand portion and of said base portion for guiding the light from the first light source means along the optical axis of said base portion; and

a third reflecting member at the opposite end of said base portion for deflecting the light guided by said second reflecting member toward said objective optical system as transmission illuminating light, and means for removably mounting said third reflecting member.

4,148,553

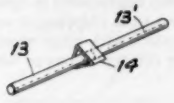
MULTIFIBER CABLE SPLICER

Adolf R. Asam, Daleville, Va., assignor to International Telephone & Telegraph Corp.

Filed Nov. 22, 1976, Ser. No. 744,016

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.21 **17 Claims**



1. A connector for optical fibers comprising:

a hollow member formed of a material that will fuse with a predetermined material, said member having a pair of opposing faces at each end thereof and a three-sided opening extending between said faces for receiving a pair of fibers to be connected; and

an optical fiber having a surface of a predetermined material, said fiber fused within said opening by means of said member and said predetermined material.

4,148,554

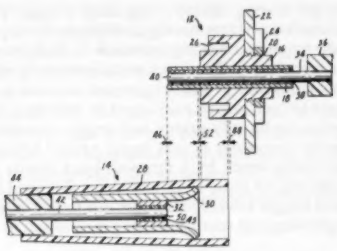
METHOD OF PROVIDING RECESSED OPTICAL FIBER ENDS FOR USE IN CONNECTOR STRUCTURES

John M. Magnusson, Richfield, and Bryon J. Cronk, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 5, 1977, Ser. No. 822,268

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96.21 **24 Claims**



1. A connector adapted for providing an optical coupling between an optical fiber and an associated optical element, said connector comprising

a housing member having an opening extending between a rear portion and a front portion through which an optical fiber may be inserted to have an end of the fiber protruding beyond the end of the front portion, said front portion surrounding the opening and exhibiting a rate of wear adjacent the opening which is less than that of a protruding fiber end when both are polished under a predetermined set of polishing conditions,

means for permanently anchoring the fiber centered within the opening in the housing member and in said protruding position to prevent relative motion therebetween, and whereupon after the fiber is permanently anchored within the housing member, the front portion of the housing member and protruding fiber end may be ground to provide substantially planar ends which are perpendicular to the axis of the fiber and subsequently polished under said predetermined set of conditions to cause the fiber end to be polished smooth and slightly recessed within the front

portion of the housing member as a result of differences in the rates of material removal, and wherein the

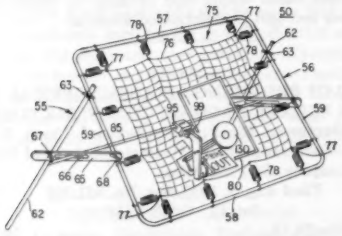
housing member further comprises means for maintaining the recessed fiber end axially aligned with, and the planar front portion abutting a support for an associated optical element and for enclosing the interface therebetween to prevent foreign elements from contacting the fiber end, thereby minimizing optical losses, while the recessed fiber end in the housing member results in a small gap between the fiber end and the associated optical element and thereby prevents degradation in optical efficiency as may otherwise result from chipping or scratching of the fiber end due to contact with other members during repeated connections or disconnections or when connected and in use.

4,148,555

TARGET WITH SCORE INDICATOR

Victor S. Lerman, Malden, Mass., assignor to Martin Yale Industries, Inc., Chicago, Ill.

Filed Jul. 25, 1977, Ser. No. 818,408
Int. Cl.[2] A63B *69/40*
U.S. Cl. 273—26 A **9 Claims**



1. A target scoring device comprising a target formed of resilient material, a trigger having an elongated arm positioned behind said target and linearly moveable in reciprocating motion toward and away therefrom, score indicating mechanism operatively connected to said trigger and responsive to movement of said trigger toward said target to indicate a score, and spring means continually urging said trigger toward said target, whereby movement of said target against trigger due to said target being struck by a thrown object results in movement of said trigger away from said target followed by movement of said trigger toward said target due to said spring means thereby operating said score indicating mechanism to show the score.

4,148,556

MULTIMODE OPTIC DEVICE

Gerald F. Sauter, Eagan, and Roger W. Honebrink, Chaska, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,167
Int. Cl.[2] G02B *5/14*; G02F *1/22*
U.S. Cl. 350—96.13 **7 Claims**

1. An optic fiber device, comprising:

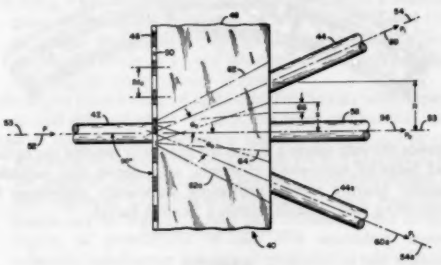
a planar substrate member having first and second planar parallel surfaces;

a planar magnetizable film having stripe domains, which stripe domains are capable of being sustained and moved, said magnetizable film being a layer that is integral with the first surface of said substrate member;

an input optic fiber that is coupled to said magnetizable film at the join of its optic axis and the first planar surface of said magnetizable film;

a plurality of output optic fibers that are coupled to the second planar surface of said substrate member, said output optic fibers radially oriented about said joint at a predetermined radial distance and at predetermined angular spacings;

means for directing a light beam along the optic axis of said input optic fiber; and



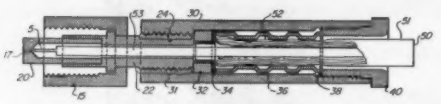
means coupling a field H in the plane of said magnetizable film for rotating said light beam at said join and directing said rotated light beam upon a selected one of said output optic fibers.

4,148,557

ADJUSTABLE FIBER OPTIC CONNECTOR

Steven E. Garvey, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 11, 1977, Ser. No. 814,606
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.20 **3 Claims**



1. An adjustable fiber optic connector for end-to-end connection of individual optical fiber cable having a cleaved optical fiber, inner and outer jackets and stranded strength member between said jackets, said connector comprising:

a ferrule, having a coupling surface, for retaining the optical fiber and inner jacket;

a barrel having coupling means for coupling to the ferrule and for adjusting the cleaved end of the optical fiber with the coupling surface of the ferrule;

a crimp sleeve crimped to the optical fiber cable within the barrel;

a bushing for abutting the crimp sleeve against the ferrule within the barrel; and

locking means, coupled to the barrel and crimp sleeve for locking the adjusted position of the optical fiber in the ferrule.

4,148,558

OPTICAL TRANSMISSION LINE BY-PASS RELAY

David B. Schuck, Escondido, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 17, 1977, Ser. No. 842,869
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.20 **4 Claims**

1. An optical by-pass relay comprising:

an optical input path;

an optical output path;

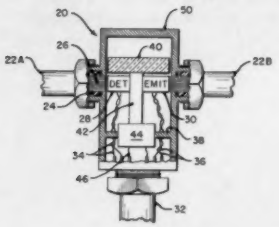
a solenoid having an actuating input for positioning the movable member of said solenoid in a first or a second position;

a detector operatively connected with said movable member

and positioned in said optical path for a first position of said movable member;

means for operatively coupling said detector to a utilization device;

an optical emitter operatively connected with said movable member and also positioned in said optical output path for



said first position of said movable member, said emitter operatively coupled to said utilization device; and

optical coupler means affixed to said movable member such that in a second position of said movable member said optical coupler completes the optical path from said input path to said output path and said utilization device is by-passed.

4,148,559

METHOD AND DEVICE FOR CONNECTING OPTICAL FIBRES

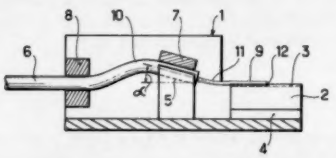
Francis Gauthier, Oullins, France, assignor to Societe Anonyme Dite: Les Cables de Lyon, Lyons, France

Filed Sep. 30, 1977, Ser. No. 838,231

Claims priority, application France, Oct. 5, 1976, 76 29891

Int. Cl.[2] G02B *5/14*

U.S. Cl. 350—96.21 **11 Claims**



1. A device for connecting optical fibers, said fibers having a protective covering, the device comprising identical connection elements for each fiber end, each one of said connection elements being of a staircase configuration and having a first rectilinear alignment structure for an end portion of its fiber and a second rectilinear alignment structure for a portion of the fiber adjacent the end portion, the axes of the alignment structures being in the same plane and at an angle of a few tens of degrees to each other such that when the optical fiber is held in the second rectilinear alignment structure its end portion is held in the first rectilinear alignment structure by a resilient bend of a few tens of degrees in a length of the fiber extending between the alignment structures, wherein connection is performed by superposing with their first alignment structures face to face and in alignment with the end portions of the fibers extending substantially half-way along their respective first alignment structures.

4,148,560

OPTICAL GUIDES

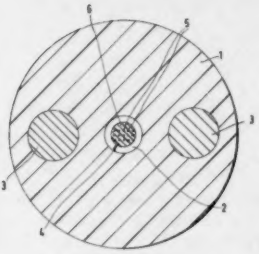
David S. Margolis, London, England, assignor to BICC Limited, London, England

Filed Jul. 7, 1977, Ser. No. 813,623

Claims priority, application United Kingdom, Jul. 8, 1976, 28481/76

Int. Cl.[2] G02B *5/16*

U.S. Cl. 350—96.23 **12 Claims**



1. An optical cable comprising at least one optical bundle comprising at least a plurality of optical fibres, individual fibres of the or each optical bundle and/or at least two fibre-groups each comprising an assembly of some of the fibres of the or each optical bundle being at least partially embedded in and mutually separated by encapsulating material throughout substantially the whole length of the bundle, which encapsulating material at least substantially reduces relative movement between the embedded fibres and/or the embedded fibre-groups; at least one separate elongate non-optical reinforcing member; and, surrounding the bundle or bundles and the reinforcing member or members, an outer protective sheath, wherein the protective sheath has a bore in which the optical bundle is loosely housed and the or each reinforcing member is embedded in the sheath alongside the bore, and wherein each optical fibre has a continuous abrasion-resistant coating of a hardened material and the encapsulating material of the or each optical bundle is of such a nature that, when appropriately treated, it can be removed from between the embedded fibres and/or the embedded fibre-groups at an end part of the cable or it can be softened to such an extent as to permit separation of individual optical fibres and/or fibre groups at said end part of the cable, without impairing the abrasion-resistant coatings of the optical fibres.

4,148,561

METHOD FOR PRODUCING IMPROVED RETROREFLECTIVE SYSTEM FOR SIGN SURFACES, AND IMPROVED SYSTEMS PRODUCED THEREBY

Ludwig Eigenmann, Vacallo, Ticino, Switzerland

Filed May 18, 1977, Ser. No. 798,100

Claims priority, application Italy, May 19, 1976, 23390 A/76

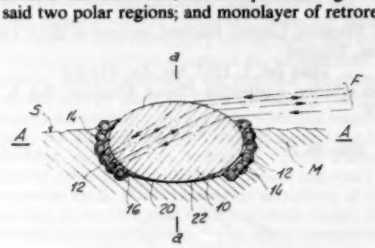
The portion of the term of this patent subsequent to Sep. 21, 1993, has been disclaimed.

Int. Cl.[2] G02B *5/128*

U.S. Cl. 350—105 **9 Claims**

1. A retroreflective arrangement for use in a sign having an exposed surface through which a beam of light enters and through which the beam is subsequently retroreflected, the arrangement comprising a substantially avoid transparent body having an index of refraction less than 1.9 and having a longitudinal major axis and a diametrical minor axis which is perpendicular to the major axis, said transparent body comprising an outer surface including two polar regions each at one of the

extremities of the minor axis, and an equatorial region intermediate said two polar regions; and monolayer of retroreflective



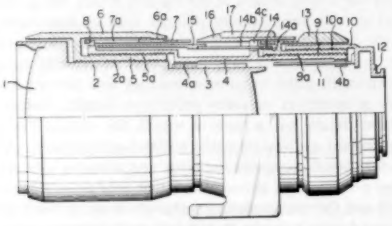
means on said body and concentrated about the equatorial region of said body.

4,148,562

LENS BARREL FOR CAMERA HAVING LENS AND CAMERA DISPLACING MECHANISMS ON RESPECTIVE SIDES OF STATIONARY SUPPORTING STRUCTURE

Hiroshi Sawano, Tokorozawa, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 4, 1977, Ser. No. 793,880
Claims priority, application Japan, May 10, 1976, 51-52196
Int. Cl.[2] G02B *7/04;* G03B *3/04, 13/18*
U.S. Cl. 350—255 **2 Claims**



1. A lens barrel for a camera comprising:

a photographing lens;

a supporting member **17** placed onto nearly a central portion of said lens barrel;

a stationary barrel **4** supported by said supporting member **17** and having a front portion and a rear portion jutting out respectively to both sides of said supporting member **17** and further having two linear guides formed thereon in parallel to an optical axis of said lens;

a front screw **5***a* provided on said front portion of said stationary barrel **4**;

a rear screw **9***a* provided on said rear portion of said stationary barrel **4**;

a first focussing ring **6** having an outer screw, an inner screw and a handling portion, said outer screw being engaged with said front screw **5***a* of said stationary barrel **4** and said handling portion being exposed around over the outer peripheral surface of the front portion of said lens barrel;

a lens holder **1**, including said lens therein and engaged respectively with said inner screw of said first focussing ring **6** and with one of said linear guides of said stationary barrel **4**;

a second focussing ring **13** having an outer screw, an inner screw and a handling portion, said inner screw of said second focussing ring **13** being engaged with said rear screw **9***a* of said stationary barrel **4** and said handling portion being exposed around over the outer peripheral surface of the rear portion of said lens barrel **4**; and

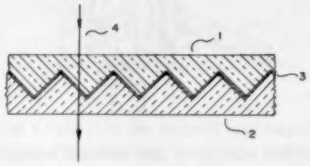
a mounting member engaged respectively with said outer screw of said second focussing ring **13** and with the other of said linear guides of said stationary barrel **4**, and having a mount portion **12** on a rear end thereof for connecting between said lens barrel and the camera.

4,148,563

TRANSPARENT OR REFLECTIVE PANEL

Edward Herbert, Rte. 44, Canton, Conn. 06019

Filed May 6, 1976, Ser. No. 683,829
Int. Cl.[2] G05D *25/00*
U.S. Cl. 350—285 **7 Claims**



1. A panel which may be transparent or reflective to light, depending upon temperature, comprising

a first transparent layer, having a plane first surface, and having its second surface contoured so as to be a reflector due to internal reflection

a second transparent layer, sealed at its edges to the first transparent layer and having its first surface contoured so as to closely fit the contour of the second surface of the first transparent layer, and having a plane second surface, and

a fluid contained between the first transparent layer and the second transparent layer,

the nature of the fluid being such that for a higher temperature the fluid is a vapor which separates the first transparent layer from the second transparent layer, resulting in internal reflection at the first transparent layer, and for lower temperatures the fluid condenses, creating a vacuum which draws the first transparent layer into close contact with the second transparent layer, providing an optical continuum through the panel and rendering the panel as a whole transparent, and

the quantity of the fluid being carefully controlled so that when the fluid is totally vaporized, there is not sufficient vapor to distend the panel excessively.

4,148,564

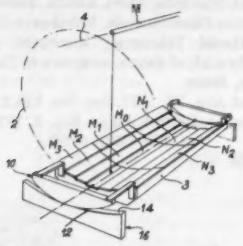
SOLAR SENSOR WITH LINEAR CONCENTRATION WITH A FIXED RECEIVER AND MOVABLE MIRRORS

Bernard Devin, Gif sur Yvette, and Michel Guillemot, Vitry sur Seine, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 16, 1977, Ser. No. 807,291
Claims priority, application France, Jul. 6, 1976, 76 20651
Int. Cl.[2] G02B *5/10*
U.S. Cl. 350—292 **5 Claims**

1. A solar sensor with linear concentration comprising: a system of elementary segmental mirrors arranged along the generating lines of a cylinder portion and directing the solar rays to a zone located in the vicinity of a generating line of said cylinder portion, and a receiver of linear configuration located in said zone, said receiver being stationary, and means for ensuring that the mirror system is subject to a rotational movement without sliding movement in such a way that the zone towards which the reflected rays are directed remains fixed and the direction of said reflected rays remains unchanged when the position of the sun changes, said means comprising

the first cylinder portion which supports the mirrors and a second fixed cylinder portion whose radius is equal to the



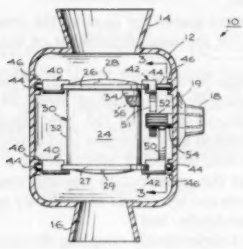
diameter of the first cylinder portion and whose axis coincides with the receiver.

4,148,565

OPTICAL TRAINING DEVICE

Ole Gunst, 19475 Grandview Dr., Topanga, Calif. 90290

Filed Jun. 9, 1977, Ser. No. 804,993
Int. Cl.[2] A61B *3/00*; A61H *5/00*
U.S. Cl. 351—2 **11 Claims**



1. An optical training device comprising:
a housing;
means defining an optical path through the housing including first and second lenses mounted in optical alignment within the housing;
a sealed cell positioned between the lenses and in contact therewith, the cell containing a liquid having an index of refraction approximately equal to that of the lenses;
means for permitting viewing of an external object through the lenses and the housing by one eye while the object is viewed directly outside the housing with the other eye; and
means for selectively varying the plane of one of the lenses relative to the other to vary the optical path through the housing.

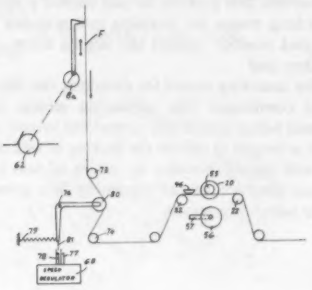
4,148,566

MOTION-PICTURE CAMERA ACCOMMODATING SILENT-FILM AND SOUND-FILM CASSETTES

Otto Freudenschuss; Otto Kantner, and Peter Révy von Belvárd, all of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Continuation of Ser. No. 669,085, Mar. 22, 1976, Pat. No. 4,003,643, which is a continuation-in-part of Ser. No. 460,136, Apr. 11, 1974, abandoned. This application Jan. 17, 1977, Ser. No. 759,899
Claims priority, application Austria, Apr. 16, 1973, 3383/73
Int. Cl.[2] G03B *31/02*
U.S. Cl. 352—27 **5 Claims**

1. A motion-picture camera capable of selectively utilizing both sound-film cassettes and silent-film cassettes, different in size from each other, and provided with a synchronous recording system, comprising:
a cassette chamber adapted to receive a selected cassette;
means for detecting the type of a cassette selected by sensing the size of a film cassette loaded within said cassette chamber;
drive means for driving a film in such film cassette loaded within said cassette chamber for a photographing operation;



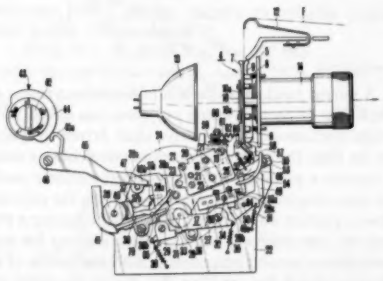
film-feed-speed-stabilizing means means coupled to said drive means for setting one of two different modes of speed regulation for a film to be driven by said drive means; and
control means for setting said camera to one of the modes of speed regulation which may be set by said film-feed-speed-stabilizing means when said sensing means detects a sound-film cassette loaded within said camera, such mode of speed regulation being suited for permitting normal photographing of a sound film in conjunction with synchronous sound recording.

4,148,567

SOUND MOTION PICTURE PROJECTION APPARATUS

Kuniyoshi Suzaki, Machida; Akira Ashida, Kanagawa; Takashi Itani, Kandaiji; Tateo Yamada, Kanagawa; Masaya Maeda, Kawasaki; Kiyoshi Takahashi, Kunitachi, and Hiroyuki Takimoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1977, Ser. No. 818,219
Claims priority, application Japan, Jul. 27, 1976, 51-89491
Int. Cl.[2] G03B *31/02, 1/56*
U.S. Cl. 352—27 **9 Claims**



1. A sound motion picture projection apparatus comprising:
(a) magnetic sound recording and reproducing means disposed along a sound recording and reproduction film path;
(b) pressure means for pressing a film against said magnetic means for sound recording and/or reproduction, said pressure means being shiftable between a first position to

press the film against the magnetic means and a second position to release the pressing of the film against the magnetic means;

(c) urging means for urging said pressure means toward said first position thereof;

(d) continuous film advancing means disposed along said sound film path for continuously advancing the film after passing said magnetic means;

(e) manually operable means for shifting said pressure means from said first position to said second position;

(f) locking means for retaining said pressure means in said second position against the urging force of said urging means; and

(g) film detecting means for detecting the film advanced by said continuous film advancing means, said detecting means being operatively connected to said locking means and arranged to release the locking of said pressure means in said second position by means of said locking means upon detection of the oncoming film advanced by said film advancing means.

4,148,568

MIRROR MECHANISM FOR A FILM PROJECTOR

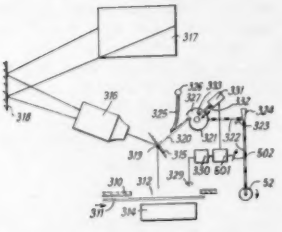
Gordon McNally, Newcastle on Tyne, England, assignor to Vireco, A.G., Zurich, Switzerland

Filed Nov. 18, 1977, Ser. No. 852,698

Claims priority, application United Kingdom, Nov. 19, 1976, 48447/76

Int. Cl.[2] G03B *41/10*

U.S. Cl. 352—109 **8 Claims**



1. A mirror mechanism for a continuous-movement cinematograph film projector, which projector has means for driving the film continuously and a drive shaft driven in synchronism with the film, the mirror mechanism comprising a compensating mirror; a pivot axis about which the mirror oscillates; a lever arm coupled to the mirror to oscillate the mirror; a cam-follower portion on the lever arm; a cam having a profile on which the cam-follower portion rides; a spring for urging the cam-follower portion into contact with the profile of the cam; a slipping clutch for coupling the cam to the drive shaft and allowing the cam to be arrested while the drive shaft continues to rotate; a blocking member having a blocking position where it engages the cam and a release position where it is clear of the cam, the cam being arrested by the blocking member when in the blocking position; and a solenoid which, when energised by an electrical release pulse, withdraws the blocking member to the release position to release the cam.

4,148,569

LENS UNIT FOR MOTION PICTURE PROJECTOR AND OTHERS

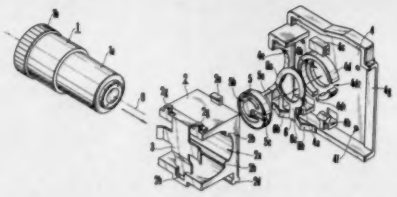
Kuniyoshi Suzaki, Machida; Akira Ashida, Yokohama; Takashi Itani, Yokohama; Tateo Yamada, Yokohama; Masaya Maeda, Kawasaki; Kiyoshi Takahashi, Kunitachi, and Hiroyuki Takimoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1977, Ser. No. 826,231

Claims priority, application Japan, Sep. 3, 1976, 51/105461

Int. Cl.[2] G03B *3/00*

U.S. Cl. 352—140 **13 Claims**



1. A construction of a lens device for a motion picture projector comprising:

(a) a motion picture projection lens construction,

(b) a construction holding means for fixedly holding the lens construction,

(c) an adjustment means for moving the construction holding means for focusing adjustment of the lens construction,

(d) guide means permitting movement of said construction holding means by said adjusting means in such a manner that the optical system of the lens construction moves along the optical axis, whereby said construction holding means and said adjusting means form a unit in such a manner that the construction holding means and the adjusting means can be treated as one body and can be operated independently, and

(e) means for cooperatively coupling the construction holding means with the adjusting means, comprising

(1) a cam follower provided on either said construction holding means or said adjusting means,

(2) a cam groove on the other of said means in which said cam follower is engaged, and,

(3) an engagement means for facilitating the introduction of said cam follower into said cam groove at the time of assembling the construction holding means and the adjusting means into one unit and for prohibiting the cam from escaping out of the cam groove after introduction into the cam groove.

4,148,570

MOTOR CONTROL DEVICE FOR SOUND MOTION PICTURE CAMERA

Toshikazu Ichiyanagi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1977, Ser. No. 822,252

Claims priority, application Japan, Aug. 13, 1976, 51/96772

Int. Cl.[2] G03B *21/48*

U.S. Cl. 352—180 **4 Claims**

1. A motor control circuit for a sound motion picture camera comprising:

(a) a film motor for intermittent film drive and a first drive circuit for controlling the speed of rotation of said motor;

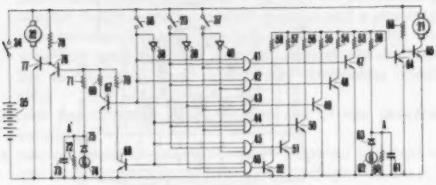
(b) a capstan motor for constant-speed film drive and a second drive circuit for controlling the speed of rotation of said motor;

(c) a first switch means arranged to be turned on and off depending upon the length of a slack loop of the film;

(d) a second switch means arranged to be turned on and off depending upon the type of a film magazine used;

(e) a third switch means for controlling operation of said second drive circuit to change the speed of rotation of said capstan motor;

(f) first control means for controlling the rotation speed of the film motor, said means being connected to said first drive circuit to change the output of said first drive circuit in correspondence to the open or closed state of the first, second and third switch means and thereby to control the speed of the film motor; and



(g) a logic circuit for controlling said first control circuit means, said logic circuit including an inverter which provides as an output a signal in correspondence to the open or closed state of the three switch means, and an AND circuit for supplying the signal corresponding to the open or closed state of the three switch means to control the output of the first control circuit means corresponding to the open or closed state of each switch means.

4,148,571

PHOTOCOMPOSING DEVICE AND METHOD

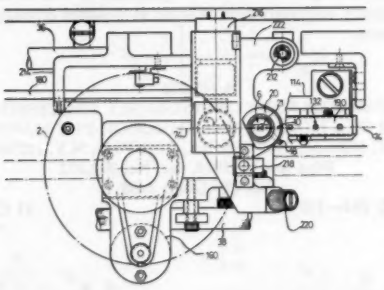
Louis M. Moyroud, 202 Grove Way, Delray Beach, Fla. 33444

Continuation-in-part of Ser. No. 617,847, Sep. 29, 1975, and Ser. No. 763,611, Jan. 28, 1977, Pat. No. 4,119,977. This application Feb. 23, 1977, Ser. No. 771,301

Claims priority, application United Kingdom, Feb. 25, 1976, 07519/76

Int. Cl.[2] G03R *17/04*

U.S. Cl. 354—12 **15 Claims**



1. A photocomposing machine comprising a character matrix bearing a plurality of characters, character projection means for projecting images of said characters onto a recording surface, character spacing means for spacing said images on the recording surface to form composed lines of characters, a drive motor coupled to drive said character spacing means, size changing means for changing the size of the character images projected from said matrix, and coupling means for selectively coupling and uncoupling said size changing means with said drive motor to operate said size changing means, an auxiliary matrix bearing graphic symbols, and a lamp for illuminating said symbols, said auxiliary matrix and lamp being mounted adjacent the first-named matrix, and means for selectively moving said size changing means and said auxiliary matrix relative to one another to bring said size changing means into operative position opposite a selected graphic symbol for projection of an image of said symbol onto said recording surface.

4,148,572

KEYBOARD CONTROLLED PHOTOTYPESETTING MACHINE

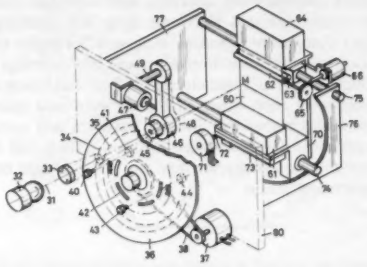
Hans Linde, Berlin, Fed. Rep. of Germany, assignor to H. Berthold AG, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,564

Claims priority, application Fed. Rep. of Germany, May 4, 1976, 7614382[U]

Int. Cl.[2] B41B *17/04, 21/08*

U.S. Cl. 354—15 **3 Claims**



1. The keyboard controlled phototypesetting machine for the typesetting of texts of preferably uniform letter type and letter size consisting of a light source with display optic, a continuously rotating exchangeable symbol carrier and a light-sensitive material which is inside a cassette in a movable film transport carrier, characterized by the fact that the entirety of the constructional elements of the phototypesetting machine are attached or supported by a central supporting wall where the optical display system and the symbol carrier are located on the one side of the support wall, and the film transport carrier with its transport mechanism is located on the opposite side of the supporting wall;

said light source continuously lighting two symbols at one time on said symbol carrier, a fixed focus lens movable by means of a magnet from one position to a second position thereby selecting one of said two symbols for focusing on a common point at the copying plane.

4,148,573

CAMERA INCORPORATING ELECTRONIC FLASH UNIT

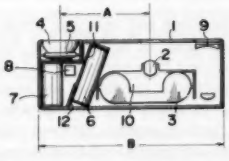
Akira Yamanaka, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 16, 1977, Ser. No. 777,988

Claims priority, application Japan, Apr. 8, 1976, 51/39877

Int. Cl.[2] G03B *15/03*

U.S. Cl. 354—145 **11 Claims**



1. A camera for use with replaceable film cartridge and at least one electric battery comprising;

a camera housing of substantially rectangular parallelopiped

configuration which is thin in the upward and downward direction and which delineates a space therein;

cartridge compartment means for receiving said film cartridge, said cartridge compartment means being disposed within said camera housing at substantially a rear part of said space;

an electronic flash unit supplied with an electric power from said electric battery and disposed within said camera housing at substantially a forward part of said space; and

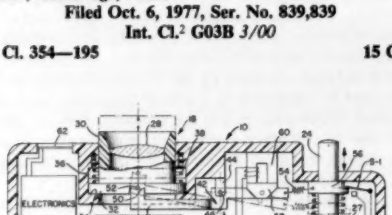
battery compartment means for receiving said electric battery, said battery compartment means having an elongate shape and being disposed within said camera housing between said cartridge compartment means and said electronic flash unit and being inclined with respect to the forward and rearward direction, said cartridge compartment means and said electronic flash unit abutting said battery compartment means at spaced locations in said forward and rearward directions, and said cartridge compartment means and said electronic flash unit being out of register with each other in the forward and rearward direction such that the distance between said cartridge compartment means and said electronic flash unit in the lateral direction is shorter than the width of said battery compartment means.

4,148,574

SONAR CONTROLLED TWO FOCAL POSITION LENS SYSTEM

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 6, 1977, Ser. No. 839,839
Int. Cl.[2] G03B 3/00
U.S. Cl. 354—195 **15 Claims**



1. A photographic camera having a film plane comprising:

a lens;

means for mounting said lens for displacement between a first position in which subjects located in one distance range from the camera are focused on the film plane, and a second position in which subjects located in another distance range from the camera are focused on the film plane;

an actuator;

sonic pulse transmitting and receiving means responsive to the manual actuation of said actuator for detecting the location of a subject to be photographed within one or the other of such distance ranges and for generating a signal corresponding to either one or the other of such two ranges when the time interval between pulse transmission and reception corresponds to that distance range in which the subject is located; and

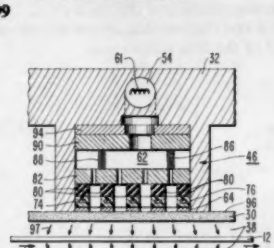
means responsive to said signal for displacing said lens mounting means to position said lens in the appropriate one of its said first and second positions to focus the subject on the film plane.

4,148,575

THERMAL PROCESSOR

Bohdan W. Siryj, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 22, 1977, Ser. No. 818,010
Int. Cl.[2] G03D 7/00
U.S. Cl. 354—299 **10 Claims**



1. A thermal processor for gas heat development of a photographic image on a strip of photographic film passing through the processor comprising:

a housing arranged to receive said gas under pressure,

thermally conductive porous gas distribution means in fluid communication with said housing for uniformly distributing said gas to said film through the pores at a given pressure, said gas distribution means tending to have an irregular surface and being supported by said housing and being disposed adjacent opposite surfaces of said film at a spacing such that said pressure of gas at said film is sufficient to support said film when passing through said processor, and

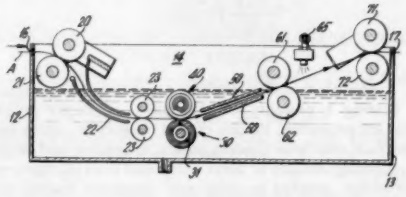
gas heating means including flexible heat generating means thermally conductively coupled to and juxtaposed with said irregular surface of said distribution means for uniformly heating said distribution means at an elevated temperature with respect to the ambient by thermal conduction regardless of the irregularities of said surface to thereby uniformly heat said gas as it passes through said pores.

4,148,576

APPARATUS FOR CONTINUOUSLY PROCESSING FILM IN A HORIZONTAL THROUGH-PUT MANNER

Peter V. Martino, 9960 65th Rd., Rego Park, N.Y. 11374

Filed Aug. 9, 1978, Ser. No. 932,372
Int. Cl.[2] G03D 3/08
U.S. Cl. 354—320 **11 Claims**



1. An apparatus for continuously processing, in a horizontal through put manner, a thin substrate having an image carrying coating on one surface thereof comprising:

a tank for containing processing solution, said tank having an entry end and an exit end;

a pair of rotatable entry rollers disposed adjacent the entry end of said tank, said entry rollers being disposed one above the other in nip contact for receiving said substrate and conveying it downstream in said apparatus;

means for directing said substrate into the processing solution;

a pair of rotatable holding rollers disposed adjacent said entry rollers within the solution, said holding rollers being disposed one above the other in nip contact for receiving the substrate and conveying it in a horizontal direction within the processing solution;

means for scrubbing the coated side of the substrate disposed adjacent said holding rollers, said scrubbing means including a rotatable brush roller, and a support roller disposed above said brush roller and in nip contact therewith, said support roller including a shaft portion and a plurality of substantially cylindrical, individually rotatable, free-wheeling anvil members, disposed around said shaft member in closely spaced, substantially frictionless relationship;

means for directing said substrate out of the processing solution;

a pair of rotatable squeegee rollers disposed adjacent said exit end of said tank, said rotatable squeegee rollers being disposed one above the other in nip contact for receiving the substrate, removing excess solution therefrom, and conveying the substrate towards the exit end of the tank;

means for rotating said entry rollers, holding rollers and squeegee rollers at substantially the same speed; and

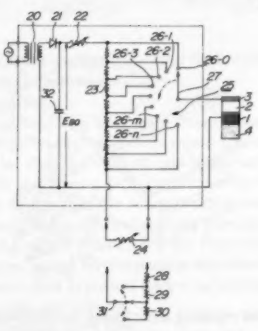
means for rotating said brush roller at a speed greater than said entry rollers, holding rollers, and squeegee rollers.

4,148,577

BIAS VOLTAGE ADJUSTING MEANS FOR ELECTROGRAPHIC APPARATUS

Masaji Nishikawa, and Muneo Kasuga, both of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Aug. 22, 1977, Ser. No. 826,673
Claims priority, application Japan, Sep. 2, 1976, 51/104223
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—35 C **7 Claims**



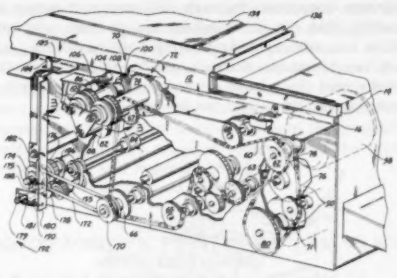
1. In an electrographic apparatus comprising a photosensitive screen composed of an insulating layer, two electrically conductive layers coated on opposite sides of said insulating layer and a photosensitive layer coated on one of said electrically conductive layers, a corona discharge device arranged at one side of said photosensitive screen and emitting a flow of corona ions, and a dielectric coated record sheet arranged at the other side of said photosensitive screen, whereby an electrostatic latent image produced on said photosensitive layer of said photosensitive screen causes said flow of corona ions directed from said corona discharge device through said photosensitive screen toward said dielectric coated record sheet to modulate so as to produce, on said dielectric coated record sheet, an electrostatic charge image corresponding to said electrostatic latent image on said photosensitive layer of said photosensitive screen, the improvement comprising means for adjusting a bias voltage applied between said two electrically conductive layers of said photosensitive screen and including a variable resistor connected in series with a voltage dividing resistor connected across a bias voltage electric source transformer.

4,148,578

RECIPROCATING CARRIAGE DRIVE SYSTEM

David P. Bujese, Toms River, N.J., assignor to Pitney-Bowes Inc., Stamford, Conn.

Filed Apr. 28, 1978, Ser. No. 901,203
Int. Cl.[2] G03G *15/28*
U.S. Cl. 355—8 **8 Claims**



1. In an electrophotocopy machine having an illuminating station for illuminating an original document, a carriage for carrying an original document in transit from a home position across the illuminating station and back to the home position, a motor drivingly connectable to the carriage for reciprocally driving the carriage; a drive system comprising:

first coupling means for drivingly connecting the motor to the carriage with a first predetermined torque acting in one direction in order to normally drive the carriage toward the home position,

second coupling means actuable for drivingly connecting the motor to the carriage with a second predetermined torque, greater than the first predetermined torque and acting in a direction opposite thereto, in order to drive the carriage across the illuminating station,

means for actuating said second coupling means for an interval of time long enough for the carriage to carry the document across the illuminating station whereby the first predetermined torque continues to act on the carriage to maintain a substantially constant drag thereon in order to dampen irregular motion of the carriage and thus smoothly move the carriage across the illuminating station.

4,148,579

AUTOMATIC MICROFILM CAMERA

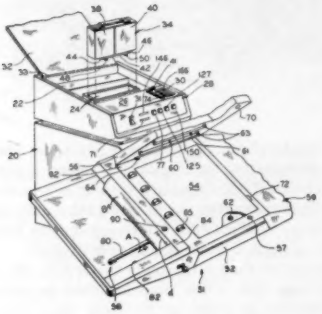
Donald J. Axelrod, Glenview, and John R. Flint, Barrington, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Aug. 3, 1977, Ser. No. 821,279
Int. Cl.[2] G03B *27/52*; B65H *1/04, 5/26*; G11B *23/04*
U.S. Cl. 355—41 **29 Claims**

1. An automatic microfilm camera comprising stack feeder means for receiving and automatically transporting a plurality of documents one at a time to be microphotographed by said camera, detector means for detecting the presence of each of said transported documents when located within a copy area of the camera, means responsive to said detector means for operating said camera to expose said microfilm and make thereon photographic images of the documents while they are in said copy area, a document transport means for feeding said documents to said copy area ad removing the same after microphotographing, means for interrupting the operation of said stack feeder to stop the automatic transport of said documents, means for feeding a single document through said document transport means during an interval while said stack feeder is

interrupted, and means for thereafter restarting said stack feeder to resume the automatic transport of documents, continuing from the point of document transport that has been reached prior to said interrupting.

17. An automatic microfilm camera comprising means for automatically transporting any of a plurality of documents past a copy area, said documents having different physical characteristics, at least one of which is separate sheets of paper and another of which is a pin-driven continuous strip of paper, means for normally transporting non-pin wheel driven ones of said documents past said copy area, pin drive wheel means on said camera for driving said continuous strip of paper, and means for normally placing said pin drive wheel means in a retracted and non-operating position during passage of non-pin-driven documents through said transport means and for extending said pin drive wheel means from said retracted position into an extended operating position during passage of pin-driven documents through said document transport means whereby said pin wheels do not engage said non-pin-driven documents and drive said pin-driven documents.



18. An automatic machine for processing a web in a preloaded cassette, with processing carried out in successive web increments comprising means for loading a cassette into said machine, means responsive to said loading for automatically driving said machine to advance said web for a predetermined distance means for detecting a jammed web condition, means responsive to said detection of a jammed web condition for signaling said machine to eject said cassette therefrom, and means responsive to each ejection signal for automatically driving said machine to advance said web a second time for a predetermined distance.

21. A system for recording automatic search marks upon microfilm comprising a camera having a format area, a pair of mark forming means, a corresponding one of said mark forming means being located on each of two opposite sides of said format area, means for applying documents in either a first or second order to be copied by said camera, and means responsive to each exposure by said camera for selectively operating one of said mark forming means when said document are copied in said first order and for operating the other of said mark forming means when said documents are copied in said second order.

4,148,580

PROCESS FOR MAKING SHADE RELIEF MAPS AND THE MAP MADE THEREBY

Everette B. Hill, Sr., 1007 W. College Dr., High Point, N.C. 27262

Filed Dec. 27, 1976, Ser. No. 754,607
Int. Cl.[2] G03B *27/68, 27/32;* G09B *29/12*
U.S. Cl. 355—52 **6 Claims**

1. A method for manufacturing a slope related shade relief map having shade values thereon proportional to the degree of slope, said method comprising the steps of: providing a discrete weight and configuration study having values proportional to the degree of actual slope appearing in the area represented; converting the discrete weight and configuration values by selective distortion thereof to produce an indiscrete shade configuration for use in image production, said indiscrete shade configuration having shade density values proportional to the degree of slope in said area; providing a study of selected features in said area other than slope, for use in image produc-

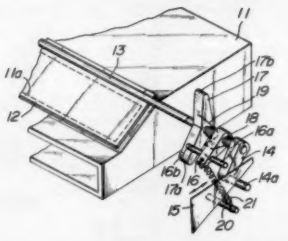
tion; combining the proportional shade density value image and features image in superimposed registry; and reproducing the combined image to produce a slope related shade relief map having representations of relief thereon, said relief comprising a manufactured shade with the value thereof proportional to the degree of actual slope appearing in the area represented.

4,148,581

SHUTTER OPENING AND CLOSING MECHANISM FOR AN ELECTROGRAPHIC APPARATUS

Hiroshi Tsuda, Mitaka, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Aug. 18, 1977, Ser. No. 826,056
Claims priority, application Japan, Aug. 30, 1976, 51-102701
Int. Cl.[2] G03B *27/76*
U.S. Cl. 355—71 **1 Claim**



1. In a shutter opening and closing mechanism for an electrographic apparatus comprising a reciprocating exposing and scanning means for producing a manuscript image on a photosensitive screen so as to produce a first electrostatic latent image corresponding to the manuscript image thereon, means for modulating a flow of corona ions by the first electrostatic latent image so as to produce a second electrostatic latent image on a record sheet, a dark box for surrounding said photosensitive screen and intercepting exterior light, an opening being provided in said dark box for passage of light flux reflected from said manuscript image therethrough onto said photosensitive screen, and a shutter for closing said opening and operatively interlocked with said reciprocating exposing and scanning means so as to open said opening when said first electrostatic latent image is to be produced on said photosensitive screen and to close said opening at intervals of time other than said time of producing said first electrostatic latent image on said photosensitive screen, the improvement comprising a rotary shaft for rotatably supporting said shutter so as to effect

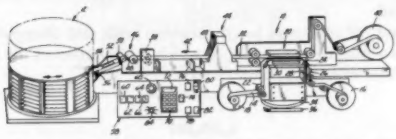
opening and closing movements thereof, a first lever secured to one end of said rotary shaft and biassed in a direction of opening said shutter, an adjustable member engaged with said first lever and limiting an inclined angle of said shutter in its open position to a value selected in response to the concentration of said manuscript image, a second lever freely mounted on said rotary shaft and biassed in a direction to be urged against said first lever, and a third lever freely mounted on said rotary shaft and biassed in a direction to be urged against said second lever, the forward movement of said exposing and scanning means for producing said first electrostatic latent image causing said exposing and scanning means to be engaged with said third lever so as to rotate the third lever in one direction and through said second lever rotating said first lever by an angle defined by said adjustable member, thereby opening said shutter through said rotary shaft by a given angle, said shutter being operative thereby as an exposure controlling diaphragm, the backward movement of said exposing and scanning means causing it to be engaged with said third lever and rotating said third lever only in an opposite direction, thereby maintaining the closed position of said shutter.

4,148,582

PROGRAMMABLE MICROFICHE DUPLICATOR AND SORTER APPARATUS

Thomas V. DeRyke, Libertyville; Kenneth J. Fedesna, Des Plaines, both of Ill., and Ronald D. Elms, Chagrin Falls, Ohio, assignors to Addressograph-Multigraph Corporation, Los Angeles, Calif.

Filed Apr. 27, 1977, Ser. No. 791,524
Int. Cl.[2] G03B *27/02, 27/08*
U.S. Cl. 355—97 **11 Claims**



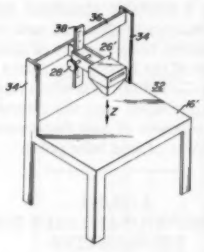
1. An apparatus for producing sorted fiche copies of a master, said apparatus comprising:
an exposure station,
a master film comprising a series of image areas each corresponding to fiche copies to be produced, said master film bearing order data for each of said image areas,
said order data comprising data representative of the number of copies to be made of the corresponding image area and sorter control data comprising start position data representative of a sorter position for the first fiche copy,
master transport means for presenting individual master film image areas to said exposure station in response to master transport command signals,
means for supplying copy film,
copy film transport means for presenting sections of said copy film to various stations in response to copy transport command signals,
said exposure station including means for exposing a presented section of said copy film with an image of the presented master image area,
reader means including means for reading said order data from said presented master image area,
memory means for storing said order data received from said reader means,
a developing station for developing said exposed copy film,
an output station for dispensing said developed copy film in the form of fiche copies,
sorter means for receiving said fiche copies from said output station, said sorter means having a plurality of bins and corresponding sorter positions for receiving the fiche copies, said sorter means including motive means responsive to sorter command signals for causing movement to corresponding stations,
counter means for providing count signals indicative of the number of fiche copies which have been produced of an image area,
control means comprising:
first means for providing duplicator command signals for controlling operation of said process stations in sychronism,
second means for providing said copy transport command signals for causing said copy film transport means to present said copy film sections to said process stations in sychronism with their operations,
third means for providing sorter command signals to said sorter motive means in accordance with said order data and said count signals to cause positioning of said sorter means at particular fiche-receiving positions,
fourth means for providing said master transport command signals for causing operation of said master transport means to present the next image area to said exposure station in response to completion of the processing and sorting of the required number of fiche copies called for by said order data.

4,148,583

ORTHOSTEREOSCOPIC PLOTTER, APPARATUS AND METHOD OF USE

Jackson Gates, P.O. Box 145, Kylertown, Pa. 16847

Filed Jan. 13, 1977, Ser. No. 759,220
Int. Cl.[2] G01C *11/12*
U.S. Cl. 356—2 **8 Claims**



1. An orthostereoscopic plotter, comprising:
means for projecting images from an orthostereoscopic slide;
a surface onto which said images are projected;
means to adjust the distance between said projection means and said surface; and,
scale means to ascertain the relative distance between said projection means and said surface, thereby to be used to ascertain the contour interval of said images projected onto said surface from said orthostereoscopic slide.

4,148,584

LASER TELEMETER

Jacques Roelants, Antony, France, assignor to Compagnie Industrielle des Lasers, Marcoussis, France

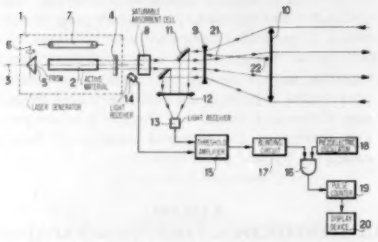
Filed Nov. 25, 1977, Ser. No. 854,969
Claims priority, application France, Nov. 30, 1976, 76 36040
Int. Cl.[2] G01C *3/08;* G02B *27/00*
U.S. Cl. 356—5 **3 Claims**

1. A laser telemeter comprising:
a laser generator comprising an active material disposed inside an optical resonant cavity, means for exciting the active material, said exciting means being capable of generating fluorescent light radiation along the axis of said cavity, and means for triggering in said excited material the emission of a laser pulse;

an optical emission system disposed at the output of said laser generator to direct said laser pulse to a target;

an optical reception system for receiving an echo of said laser pulse returned by said target, said optical reception system being disposed near said optical emission system to receive interference light coming from the optical emission system and comprising means for concentrating the light energy which it receives;

a reception circuit including a chronometer, said circuit being connected to said laser generator so as to transmit an electric emission signal to said chronometer when the laser generator emits said laser pulse, said circuit being further connected to said optical reception system to



transmit an electric reception signal to said chronometer when said circuit receives said concentrated light energy, said chronometer being capable of measuring the time which elapses between the instants when it receives respectively the electric emission signal and the electric reception signal; and

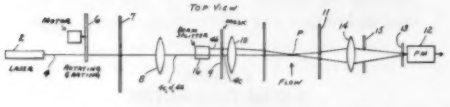
a cell containing a saturable absorbent material disposed between said laser generator and said optical emission system, said material being capable of absorbing said light when the power of the light is less than a saturation level and of allowing the light to pass when its power is greater than the saturation level, and the saturation level being greater than the power of said fluorescent radiation and less than the power of said laser pulse.

4,148,585

THREE DIMENSIONAL LASER DOPPLER VELOCIMETER

C. Brent Bargeron, Columbia, and Owen J. Deters, Silver Spring, both of Md., assignors to The United States of America as represented by the Department of Health, Education & Welfare, Washington, D.C.

Filed Feb. 11, 1977, Ser. No. 767,883
Int. Cl.[2] G01P *3/36*
U.S. Cl. 356—28.5 **10 Claims**



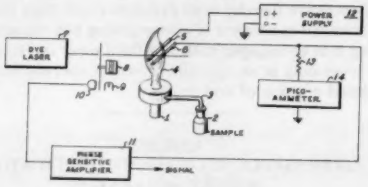
1. Apparatus for measuring velocities of fluid flow within a flow channel comprising source means for generating a main beam of coherent monochromatic radiation, diffraction grating means for converting said main beam into a center beam and diffracted beams differing in frequency from said center beam, means for splitting said center beam so as to derive a plurality of resultant beams of the same frequency as said main beam, means to project said resultant beams and said diffracted beams so as to intersect at a predetermined point in said flow channel and form interference fringes for scattering light in accordance with velocity of fluid flow in said flow channel, and photosensitive means for collecting the scattered light from said interference fringes and for generating electrical signals representing fluid velocity components.

4,148,586

APPARATUS FOR GALVANIC DETECTION OF OPTICAL ABSORPTIONS

Robert B. Green, Morgantown, W. Va.; Richard A. Keller, White Rock, N. Mex.; Gabriel G. Luther, Gaithersburg, Md.; Peter C. Schenck, Damascus, Md., and John C. Travis, Gaithersburg, Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jun. 23, 1977, Ser. No. 809,334
Int. Cl.[2] G01J *3/28*; G01R *27/02*
U.S. Cl. 356—318 **4 Claims**



1. A measuring apparatus comprising:

means for providing an atomic or molecular vapor of a sample to be analyzed;

means for irradiating said vapor with chopped, variable frequency monochromatic radiation;

means for tuning the frequency of said radiation through at least one electronic transition frequency of said sample; and

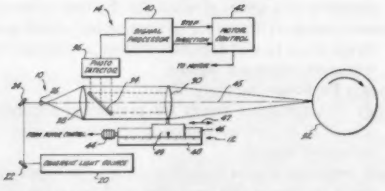
means for obtaining in synchronism with said chopping an ac signal the amplitude of which is a function of the electrical resistance of said vapor.

4,148,587

LASER GAUGE FOR MEASURING CHANGES IN THE SURFACE CONTOUR OF A MOVING PART

Joachim C. Erdmann, Seattle; Robert I. Gellert, Redmond, and Richard L. Skaugset, Kennewick, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 3, 1977, Ser. No. 838,672
Int. Cl.[2] G01B *9/02*
U.S. Cl. 356—356 **31 Claims**



1. Apparatus for measuring changes in the contour of the surface of a moving part comprising:

(a) a source of coherent light;

(b) optical means for:

(1) directing light produced by said source of coherent light along an optical axis onto the surface of a moving part;

(2) receiving light reflected by said moving part; and,

(3) producing a moving speckle pattern formed of light and dark spots based on said reflected light, said optical means including a focusing lens movable toward and away from said surface of said moving part so as to

focus said light produced by said source of coherent light onto the surface of said moving part;

(c) light detecting means mounted so as to detect said moving speckle pattern and develop pulses at a rate related to the rate of movement of the light spots forming said pattern;

(d) signal processing means connected to said light detecting means for counting said pulses, comparing pulse counts made during adjacent equal time intervals and producing movement control signals based on said pulse count comparison; and,

(e) position control means connected to said signal processing means for receiving said movement control signals and to said focusing lens for moving said focusing lens in accordance with said movement control signals.

4,148,588

FORCED KNEADING MIXER

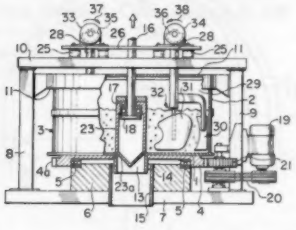
Mamoru Kanda, Kumagaya; Shousuke Ishiwata, Saitama; Masaji Horiguchi, Kumagaya; Teruo Udagawa, Saitama, and Seihei Mii, Urawa, all of Japan, assignors to Chichibu Cement Kabushiki Kaisha and Daito Giken Kogyo Kabushiki Kaisha, both of, Japan

Continuation of Ser. No. 647,557, Jan. 8, 1976, abandoned. This application Feb. 22, 1978, Ser. No. 880,142

Claims priority, application Japan, Apr. 7, 1975, 50-41174

Int. Cl.[2] B28C *5/32*

U.S. Cl. 366—56 **5 Claims**



1. A forced kneading mixer comprising a rotatable, upright cylindrical pan, means for driving the pan for rotation in a given direction, a mixing member disposed within the pan, a support for carrying the mixing member, means for mounting the support in a movable manner, means for imparting oscillation to the mixing member, said mounting means comprising a stationary member, and an oscillating table movably mounted on the stationary member with interconnecting means, means interposed therebetween, said support being secured to the oscillating table, and said means for imparting oscillation comprising an electric motor fixed mounted on the oscillating table and adapted to develop oscillation.

4,148,589

CEMENT MIXER HAVING A GUARD FOR GEARS

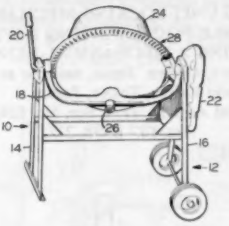
Hans Hauser, and Jon A. Violet, Fredericktown, Ohio, assignors to The J. B. Foote Foundry Co., Fredericktown, Ohio

Filed Jun. 13, 1977, Ser. No. 805,923

Int. Cl.[2] F16P *1/00*; **G05G** *25/00*

U.S. Cl. 366—60 **4 Claims**

1. In a cement mixer having a frame, a yoke pivotally carried by said frame, a drum rotatably carried by said yoke, said drum having a circumjacent ring gear extending therearound, a drive shaft rotatably carried by one of said yoke pivots, and a pinion gear mounted on said shaft and meshing with said ring gear, the improvement comprising a finger guard comprising a U-shaped portion encircling a portion of said pinion gear on the side opposite said ring gear, said U-shaped portion having a wall with a notch therein receiving said shaft, said notched wall having a pair of ears engageable with said yoke near said drive shaft, said finger guard further comprising an elongate portion affixed to said U-shaped portion and having a wall extending therefrom in a direction opposite to the direction of rotation of said ring gear, means on said guard for affixing said



guard to said yoke to position said wall of said elongate portion near said ring gear, said wall of said elongate portion being arcuate with the radius of curvature being substantially equal to the radius of said ring gear.

4,148,590

APPARATUS AND METHOD OF STIRRING FLUIDS

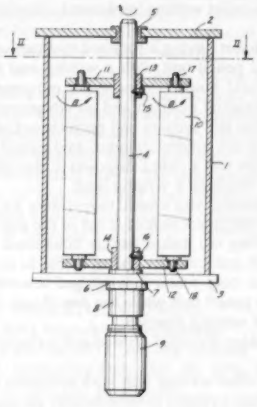
Konstantin Sotirianos, Stäfa, Switzerland, assignor to Dr. Ing. Hans Müller, Maennedorf, Switzerland

Continuation of Ser. No. 723,883, Sep. 16, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,575

Claims priority, application Switzerland, Sep. 25, 1975, 12488/75

Int. Cl.[2] B01F *9/22*

U.S. Cl. 366—288 **12 Claims**



1. A stirring apparatus, particularly for use in mixing a gaseous medium with a liquid medium containing micro-organisms to be grown, comprising an annular vessel for containing the fluid media to be stirred; a rotor mounted in said vessel for turning movement about an axis of rotation; a generally flat baffle element on said rotor and having a longitudinal axis spaced radially from said axis of rotation and two generally flat opposite faces, said baffle element being freely turnably mounted for rotation about its longitudial axis; and drive means for turning said rotor in a first direction about said axis of rotation, and for orbiting said longitudinal axis and thereby said baffle element in said first direction about said axis of rotation along an unobstructed path in which only fluid media to be stirred is present, so that when said baffle element is orbited in said first direction it freely and continuously turns in a second direction opposite to said first direction solely in response to impingement on said baffle element by the fluid media contained in said unobstructed path, and thereby contin-

uously acts by its opposite faces upon the fluid media so as to agitate the latter.

4,148,591

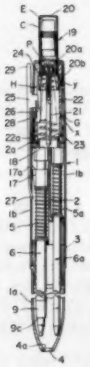
WRITING UNIT LOCKING MECHANISM IN A MULTIPLE-POINT WRITING IMPLEMENT INCLUDING A MECHANICAL PENCIL UNIT

Yoshihiro Tomura, Omiya, Japan, assignor to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1977, Ser. No. 824,303

Int. Cl.² B43K *27/12*

U.S. Cl. 401—32 **8 Claims**



1. A multiple-point writing implement comprising, in combination:

a holder cylinder having a forward aperture and a rear end;

a mechanical pencil unit with a writing end movably positioned in said holder cylinder for movement between a normal retracted position and an advanced writing position wherein said writing end projects out of said forward aperture of the holder cylinder, said pencil unil having a unit cylinder and a chuck disposed in the unit cylinder for normally chucking a writing lead;

means for making said chuck inoperative for releasing the lead from the chuck to feed it out of the unit cylinder, said means having tail means fixedly connected to said chuck within said unit cylinder and operable to make the chuck inoperative only when it is pushed toward said writing end of the pencil unit while the pencil unit is held stationary in said writing position;

a catch shoulder provided on said unit cylinder of the pencil unit:

at least one other writing unit with a writing end, provided in said holder cylinder in substantially parallel relationship with said pencil unit and movable between a normal retracted position and an advanced writing position wherein the writing end thereof projects out of said aperture of the holder cylinder;

writing unit selection means provided at said rear end of the holder cylinder and movably mounted for movement out of the holder cylinder and having a writing unit push member movable within the holder cylinder between positions in which it is opposed to the respective units, said writing unit push member being engagable with a selected unit for pushing the selected unit to the writing position thereof when the writing unit selection means is moved into the holder cylinder;

catch means on said writing unit selection means;

first engagement means in a position for engaging said catch means to arrest and hold the writing unit selection means near the position of the selection means to which the selection means has been pushed to shift the selected unit to the writing position thereof;

second engagement means in a position for engaging said catch shoulder on said pencil unit when said pencil unit is in the writing position to arrest and hold the pencil unit in that position; and

manually operable means operably associated with said first and second engagement means outside the holder cylinder for simultaneously disengaging the first and second engagement means and the catch means and catch shoulder, respectively, when the manually operated means is operated, thereby to allow the selected unit to return to its retracted position.

4,148,592

SHIELD APPARATUS FOR USE IN TUNNELLING

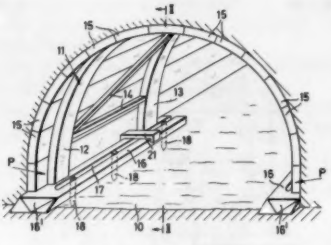
Dieter Stuckmann, Selm, and Hans Jütte, Dortmund-Brechten, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Dec. 12, 1977, Ser. No. 859,518

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2657003

Int. Cl.² E01G *3/00*

U.S. Cl. 405—141 **19 Claims**



1. Shield apparatus for use in tunnelling or the like; said apparatus comprising a framework, a plurality of drive members displaceably supported by the framework and arranged in side-by-side relationship against the tunnel wall, elongate floor beams supporting the framework and anchoring elements fixed in the floor of the working and projecting upwardly thereof, the anchoring elements engaging in slots in the floor beams to permit longitudinal displacement of the floor beams in the direction of advancement and to restrain lateral movement, the slots being open to the rear ends of the floor beams.

4,148,593

HOLE SAW ASSEMBLY

Calvin M. Clark, Bernardston, Mass., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Jan. 27, 1978, Ser. No. 872,811

Int. Cl.² B23B *41/02*

U.S. Cl. 408—204 **4 Claims**

1. A hole saw assembly comprising a drive arbor having drive shaft and a drive plate non-rotatably secured thereto, a hole saw having a tubular cutting blade and a backing plate and retaining means for retaining said drive plate and said backing plate together in coaxial alignment; said backing plate having a central aperture therein for passing over the end of said drive arbor and a plurality of apertures radially spaced from said central aperture, said drive plate comprising a generally planar member having projections depending therefrom engageable

in said apertures of said backing plate, said projections being reversely tapered to urge said backing plate and said drive

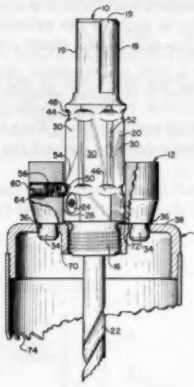
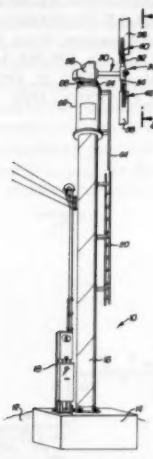


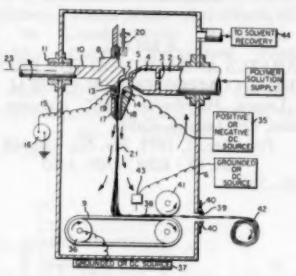
plate toward each other in use when torque is transmitted therebetween.

4,148,594
FAN BLADE FOR WIND MACHINES
Thomas P. Stafford, Glendale, Calif., assignor to SSP Agricultural Equipment, Inc., Visalia, Calif.
Filed Jun. 10, 1977, Ser. No. 805,242
Int. Cl.[2] F03D *1/06*; F04D *29/34*
U.S. Cl. 416—214 R **12 Claims**



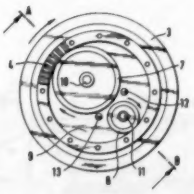
1. In a two-bladed, long propeller fan for wind machines,
a hub for mounting on a driving shaft,
a pair of tangs 180° apart extending outwardly of the hub,
a fan blade extending diametrically outwardly from each respective tang,
the improvement comprising:
means securing said blades to said tangs to distribute the stress load on the blades over an extended area to the extent of said means thereon sufficient to avoid stress concentration in a relatively small space, to apply gradual bending loading on the blades adjacent the means, permitting flexing in the means and between the means and blades over a substantial portion of said area, and providing separate spaced increments of stress transfer between said means and blades.

4,148,595
COATING FOR AERODYNAMIC SHIELD IN APPARATUS FOR MAKING NON-WOVEN WEB
Thomas K. Bednarz, Richmond, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Sep. 28, 1977, Ser. No. 837,630
Int. Cl.[2] B29C *23/00*
U.S. Cl. 425—75 **1 Claim**



1. In an apparatus for forming a fibrous web that includes a chamber containing therein a means for flash spinning a polymer solution to form a plexifilamentary strand entrained in a gaseous stream, means at one location for spreading the strand to form a web and oscillating the web in a generally vertical plane in a plurality of downward radial directions toward a collecting surface, an ion gun connected to a high voltage power source, and an opposed grounded target electrode positioned on opposite sides of said plane whereby a corona discharge occurs between said ion gun and said target electrode, said target electrode having a surface facing said ion gun, said surface of said target electrode facing said ion gun being covered with a material having a resistance of between 1 $\times$ 10^6 ohms and 10^{10} ohms, and an aerodynamic shield having front and rear members disposed on each side of said plane below said ion gun and said target electrode, said members having surfaces facing said plane, the improvement comprising: said surfaces of said front and rear members facing said plane being covered by a slightly conductive material having a stable resistance of between 5 $\times$ 10^{12} and 10^{14} ohms/sq.

4,148,596
PELLETIZING PRESS
Richard Schultz, 9402 Morschwil, Switzerland
Filed Jul. 26, 1977, Ser. No. 819,098
Claims priority, application Italy, Jul. 28, 1976, 85581 A/76
Int. Cl.[2] B29F *3/012*
U.S. Cl. 425—331 **5 Claims**



1. In a pelleting mill for the production of feed pellets or the like by a pelleting action, comprising:
a perforated rotary ring die with at least two rollers oppositely mounted therein and rotatably driven by engagement with said ring die to compress the pellet material between each roller and the ring die,
the improvement for increasing the pellet output of the mill, comprising:

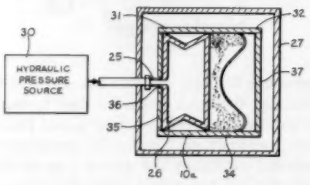
said rollers being of substantially different diameters and including a large principal roller for providing a more progressive pressing action to enhance said pelleting action and thereby increase the pellet output of the press and at least one auxiliary roller which has a substantially smaller diameter than said principal roller, said at least one auxiliary roller being mounted in opposed relation to said principal roller so as to provide a compensating action.

4,148,597

APPARATUS AND METHOD FOR PRESSURE MOLDING COMPOSITE STRUCTURAL PARTS

George E. Larsen, Hawthorne, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Sep. 1, 1977, Ser. No. 829,940
Int. Cl.[2] B29C *1/00, 3/00*
U.S. Cl. 425—389 **6 Claims**



1. An apparatus for molding structural parts from composite material for use with a standard temperature controlled heating device and a variable pressure source; the apparatus comprising:

a. a rigid container,

b. heat expansive resilient means housed in said container to exert pressure on said part, and

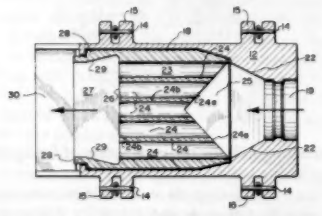
c. variable pressure exerting means, adapted to compensate for expansion of said expansive means, housed in said container adjacent to said resilient means and connected to said variable pressure source, whereby the pressure exerted on said part by said resilient means is controllable by said variable pressure source.

4,148,598

EXTRUSION DIE FOR SAUSAGE AND THE LIKE

Gabriel A. Colosimo, and Ernest Colosimo, both of 9009 W. 2700 South, Magna, Utah 84044

Filed Sep. 6, 1977, Ser. No. 830,838
Int. Cl.[2] A22C *7/00*
U.S. Cl. 425—464 **1 Claim**



1. An extrusion die for use in a food forming press comprising

(a) a housing;

(b) a plurality of parallel extrusion passages extending through the housing;

(c) a V-shaped common inlet formed at one end of the housing and opening to each of the extrusion passages, said common inlet forming angled sharp edges between said passages;

(d) an end wall at the other end of the housing through which said extrusion passages discharge, with the discharge ends of said passages being flush with one another;

(e) a bottom portion extending beyond the flush ends of the passages; and

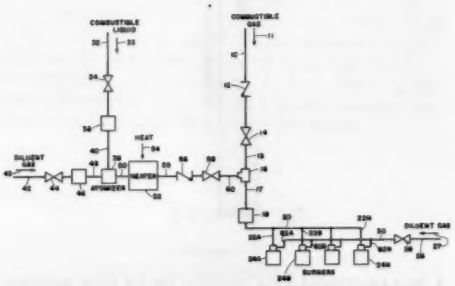
(f) sidewalls extending upwardly from the bottom portion and converging slightly as they extend from the end wall.

4,148,599

METHOD TO MIX LIQUID FUELS WITH DILUENT GAS FOR A GASEOUS FUEL BURNER

Robert D. Reed, and Hershel E. Goodnight, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 579,466, May 21, 1975, Pat. No. 4,025,282. This application May 23, 1977, Ser. No. 799,301
Int. Cl.[2] F23D *11/44*
U.S. Cl. 431—11 **7 Claims**



1. A method of burning a combustible liquid in an apparatus equipped with at least one orifice for normally during combustible gas, comprising the steps of:

(a) atomizing said combustible liquid into very small droplets;

(b) mixing said small droplets with a concurrently flowing selected diluent gas in advance of heating;

(c) heating said mixture of liquid droplets plus diluent gas until said droplets vaporize, and a mixture of combustible vapor plus diluent gas is formed; and

(d) flowing said mixture of combustible vapor plus diluent gas under pressure through said at least one orifice into a burner.

4,148,600

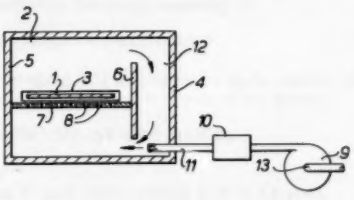
HEAT TREATMENT FURNACE FOR METAL STRIP

Edward F. B. Croft, Aldridge, and John J. Lane, Weston-Super-Mare, both of England, assignors to British Steel Corporation, London, United Kingdom

Division of Ser. No. 711,236, Aug. 3, 1976, Pat. No. 4,065,251. This application Jul. 8, 1977, Ser. No. 813,956

Int. Cl.[2] F27B 9/28

U.S. Cl. 432—8 **3 Claims**



1. In a method for the continuous heat treatment of metal strip which comprises the steps of feeding metal strip continually to the entrance of a furnace chamber of a heat treatment furnace and transporting the metal strip through the furnace on a gaseous cushion above a lenthwise extending strip support surface, the improvement which comprises injecting into the furnace chamber gas under pressure from a source located externally of the furnace chamber thereby to place its interior under pressure; permitting a portion of the gas to escape from the furnace; promoting by entrainment with the injected gas internal recirculation of the remainder of the gas along a flow path defined by internal wall structure of the furnace chamber, and directing said circulating gas over the strip support surface of the furnace chamber to provide the aforesaid gaseous cushion between said surface and metal strip travelling through furnace.

4,148,601

FLEXIBLE CAM SYSTEM FOR ACTUATING MECHANISMS MOUNTED ON A REVOLVING ASSEMBLY

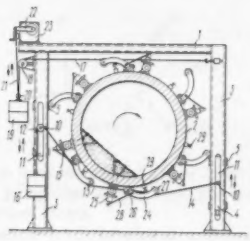
Vadim A. Kulabukhov, Moscow; Eduvard R. Allakhverdov, Tashkent; Boris A. Perlin, Tashkent; Grigory S. Shteinberg, Tashkent; Anatoly I. Afanasiev, Tashkentskaya oblast; Valentin V. Sheludko, Podolsk Moskovskoi oblasti; Boris I. Nudelman, Tashkent; Valery G. Volkov, Podolsk Moskovskoi oblast; Vasily F. Salomasov, Podolsk Moskovskoi oblasti, and Jury V. Startsev, Podolsk Moskovskoi oblasti, all of U.S.S.R., assignors to Gosudarstvenny Vsesojuzny Nauchno-Issledovatelsky Institut Tsementnoi Promyshlennosti, U.S.S.R.

Filed Jun. 27, 1977, Ser. No. 810,287

Claims priority, application U.S.S.R., Aug. 6, 1976, 2397384

Int. Cl.[2] F27B 7/36

U.S. Cl. 432—109 **6 Claims**



1. In combination, a rotatably driven assembly having a plurality of cam-actuated mechanisms actuated sequentially during rotation of said assembly, cam follower means connected to said cam-actuated mechanisms for actuating said cam-actuated mechanisms, a flexible cam system for actuating said cam-actuated mechanisms comprising a frame, and flexible guide tracks each guide track secured to said frame rigidly at one end and having tensioning means at its opposite end, said guide tracks extending along certain paths travelled by said cam follower means during rotation of said driven assembly and engageable by said cam follower means during travel along said certain paths for actuating said cam-actuated mechanisms during travel along said certain paths.

4,148,602

PHOSPHORAMIDE-HYDROXYMETHYL PHOSPHINE CONDENSATION PRODUCTS FOR TEXTILE FIRE RETARDATION

Destin A. LeBlanc, and Robert B. LeBlanc, both of Wickford, R.I., assignors to LeBlanc Research Corporation, East Greenwich, R.I.

Division of Ser. No. 643,574, Dec. 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 552,501, Feb. 24, 1975, Pat. No. 4,020,262. This application Feb. 10, 1977, Ser. No. 767,404

Int. Cl.[2] **D06M** *9/12*

U.S. Cl. 8—115.7 **10 Claims**

1. The process for rendering a textile material flame retardant comprising impregnating said material with a solution containing about 15 to 60% by weight of a condensation product of

(a) at least one hydroxymethyl phosphorus compound selected from the group consisting of

$(CH_2OH)_4P—Y$ and $(CH_2OH)_3P$

with (b) about 0.33 to 3 times the molar amount of at least one substituted phosphoramide of the formula

$PO(NR^1CH_3)(NR^2CH_3)(NR^3CH_3)$

wherein

R^1 and R^2 each independently is H or CH_2OH,

R^3 is H, CH_2OH or CH_3 and

Y is an equivalent amount of at least one anion of an acid, drying said material and curing said material by contact with ammonia.

4,148,603

METHOD OF WASHING TEXTILES AND COMPOSITION CONTAINING INORGANIC SILICATES AND POLYCARBOXYLATES AND/OR POLYPHOSPHONATES

Milan J. Schwuger, Haan; Heinz Smolka, Langenfeld, and Manfred Rostek, Dusseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 778,977, Mar. 18, 1977, abandoned, which is a continuation of Ser. No. 618,460, Oct. 1, 1975, abandoned. This application Jan. 30, 1978, Ser. No. 873,381

Claims priority, application Austria, Oct. 4, 1974, 8001/74

Int. Cl.[2] **B08B** *3/00*

U.S. Cl. 8—137 **4 Claims**

1. A process of treating soiled textiles by contacting soiled textiles with an aqueous liquor containing at least two compounds inhibiting alkaline earth metal ion precipitation on said soiled textiles as well as optionally at least one surface-active compound for a time sufficient to disperse or dissolve the soil from said soiled textiles into said aqueous liquor, separating said aqueous liquor and recovering said textiles substantially soil free, comprising using:

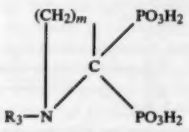
(1) from 0.2 to 10 gm of anhydrous active substance per liter of at least one finely-dispersed, water-insoluble silicate compound containing at least some combined water and having primary particles in the size range of from 100 μ to 0.01 μ and a calcium binding power of from 100 to 200 mg CaO/gm of anhydrous active substance when measured at 22° C. by the Calcium Binding Power Test Method set out in the specification, and the formula on the anhydrous basis

$(M_2O)_x.Me_2O_3.(SiO_2)_y$

where M is a cation selected from the group consisting of sodium, lithium, potassium and ammonium, x is a number of from 0.7 to 1.5, Me is a member selected from the group consisting of aluminum and boron, and y is a number from 0.8 to 6, and

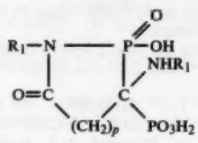
(2) from 0.05 to 2 gm per liter of at least one water-soluble compound inhibiting alkaline earth metal ion precipitation selected from the group consisting of the free acid and acid salts of cations selected from the group consisting of alkali metals and ammonium of the following acids:

(A) An azacycloalkane-2,2-diphosphonic acid having the formula



wherein m is an integer from 3 to 5 and R_3 is selected from the group consisting of hydrogen and alkyl and having 1 to 3 carbon atoms,

(B) A cyclic aminophosphonic acid having the formula

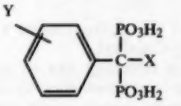


wherein p is an integer from 1 to 3 and R_1 is selected from the group consisting of hydrogen and alkyl having 1 to 6 carbon atoms,

(C) Pyrrolidone-5,5-diphosphonic acid and N-alkylpyrrolidone-5,5-diphosphonic acid where alkyl has from 1 to 6 carbon atoms,

(D) 3-amino-1-hydroxypropane-1,1-diphosphonic acid, and

(E) A polyphosphonic acid having the formula



wherein X is a member selected from the group consisting of OH and NH_2 and Y is a member selected from the group consisting of hydrogen and halogen, with the proviso that when X is NH_2, Y is halogen, wherein the ratio of said water-soluble compond to said silicate compound in said aqueous liquor is from 1:8 to 2:1.

4,148,604

APPLYING A REINFORCING SUBSTANCE TO A MATERIAL HAVING A TEXTILE SURFACE

Hans Bächtiger, Stallikon, Switzerland, assignor to Gygli Technik AG, Zug, Switzerland

Filed May 4, 1977, Ser. No. 793,735

Claims priority, application Switzerland, Oct. 29, 1976, 13684/76

Int. Cl.[2] **D06M** *13/34*

U.S. Cl. 8—181 **9 Claims**

1. Method of reinforcing material (7) having a textile surface, in which the material with the textile surface is exposed to a liquid reinforcing substance, and the reinforcing substance is applied to the surface by screen printing, said method comprising, the steps of

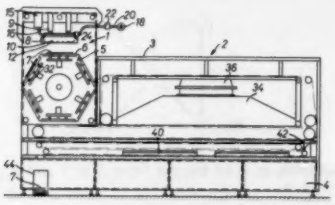
providing a vessel (8) having a screen printing stencil (10) forming one wall thereof;

locating said material (7) adjacent one side of the stencil with the textile surface facing the stencil;

introducing the reinforcing liquid substance into the vessel, and hence on the other side of the stencil, distributed over the stencil;

maintaining the level of liquid reinforcing substance within the vessel at a predetermined depth from the side of the stencil to which said substance is applied;

subjecting the reinforcing substance within said vessel to fluid pressure to force the reinforcing substance through



the screen into said material by subjecting the interior of the vessel to fluid pressure, the quantity of reinforcing substance being applied depending on the pressure to the reinforcing substance;

and then releasing the fluid pressure from the vessel.

4,148,605

RUST INHIBITOR AND COMPOSITIONS THEREOF

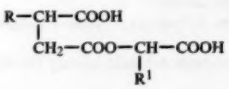
Harry J. Andress, Jr., Wenonah, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 7, 1976, Ser. No. 730,551

Int. Cl.[2] C10L *1/18, 1/22*

U.S. Cl. 422—7 **13 Claims**

1. A compound having the following general structure:



where R is alkenyl having from about 4 to about 24 carbon atoms and R′ is C_1–C_{16} alkyl.

12. A method of inhibiting rust or corrosion of metallic surfaces susceptible to contamination by contact with moisture or moisture containing organic media comprising contacting said metallic surfaces with an organic material containing a minor amount sufficient to inhibit rust or corrosion of said metallic surfaces, with a compound as defined in claim 1.

4,148,606

STERILIZATION OF DIALYZER

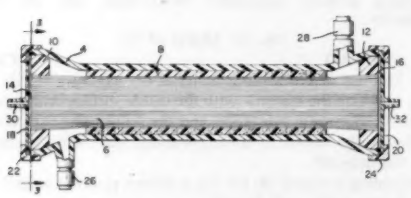
Minoru Morita, Yokohama; Yoshishige Fujii, Otsu, and Yasuo Taniguchi, Hikone, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Sep. 22, 1977, Ser. No. 835,597

Claims priority, application Japan, Sep. 24, 1976, 51-113716

Int. Cl.[2] A61M *1/03;* A61L *1/00, 13/00*

U.S. Cl. 422—21 **19 Claims**



1. A wet state sterilization method for a semipermeable membrane of a dialyzer the steps which comprise:

a. saturating a semipermeable membrane of a dialyzer with an antibacterial agent suspended in a liquid; and

b. irradiating said saturated membrane with microbiocidal radiation rays in the presence of said agent, said rays being applied in an amount to kill substantially all remaining microorganisms.

4,148,607

APPARATUS AND ANALYSIS FOR AGGLUTINATION REACTION

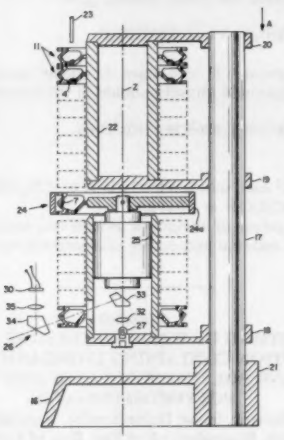
Domenico Bernoco, Rheinfelden; André Mottu, Basel, and Lothar Waltz, Ettingen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 17, 1976, Ser. No. 658,204

Claims priority, application Switzerland, Feb. 28, 1975, 2567/75

Int. Cl.[2] G01N *33/16, 21/60, 31/02, 31/14*

U.S. Cl. 23—230 B **27 Claims**



1. An analysis process based on an agglutination reaction, comprising (a) mixing a specimen for analysis with one or more reagents in a vessel of progressively decreasing cross-section in a first direction leading to a base thereof, (b) incubating the mixture, (c) centrifuging the incubated mixture at least once about an axis outside the vessel so as to hurl the particles in said first direction onto the vessel base, the same being disposed substantially in the direction of the centrifugal force, with the result that the agglutinated particles adhere to the vessel base whereas the unagglutinated elements remain free thereon, (d) ceasing said centrifuging, and (e) determining the nature of the reaction which has occurred by observing the presence or absence of the agglutinated or non-agglutinated elements after a time interval sufficient for their separation along a path downwardly inclined from the vessel base.

4,148,608

METHOD FOR PROCESSING FLUID MATERIALS PARTICULARLY IN THE PREPARATION OF SAMPLES FOR RADIOACTIVE ISOTOPE TRACER STUDIES

Niilo H. Kaartinen, Turku, Finland, assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Division of Ser. No. 277,261, Aug. 2, 1972, Pat. No. 3,979,503, which is a continuation of Ser. No. 728,939, May 14, 1968, abandoned. This application Jul. 19, 1976, Ser. No. 706,499

The portion of the term of this patent subsequent to Sep. 7, 1993, has been disclaimed.

Int. Cl.[2] G21H *5/02*

U.S. Cl. 23—230 PC **8 Claims**

1. A method of preparing isotope-containing samples for use in studies utilizing radioactive isotopes, said method comprising the steps of

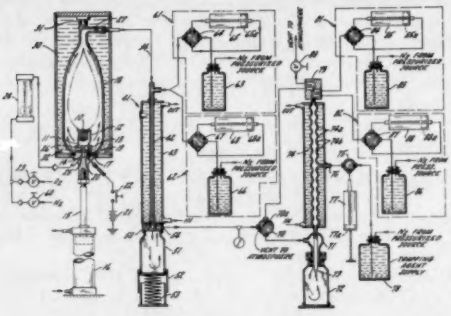
(a) combusting a sample of material containing ^3H and ^{14}C in

a combustion chamber to produce combustion products containing ^3H_2O and $^{14}CO_2$ in gaseous form,

(b) continuously exhausting the ^3H_2O and $^{14}CO_2$ gas from said combustion chamber during the combustion of said material,

(c) continuously cooling the exhausted combustion products in a heat exchanger to convert the ^3H_2O gas to a liquid during the combustion of said material,

(d) continuously removing said liquid from said heat exchanger during the combustion of said material and transferring said liquid to a sample collection vessel to provide a liquid sample containing the recovered ^3H_2O for use in studies utilizing radioactive isotopes,



(e) maintaining the $^{14}CO_2$ in gaseous form during recovery of the ^3H_2O in liquid form,

(f) continuously contacting the $^{14}CO_2$ with a trapping agent in a trapping chamber to convert the $^{14}CO_2$ to a liquid during the combustion of said material,

(g) removing the resulting ^{14}C-containing liquid from said trapping chamber to recover the ^{14}C and transferring said liquid to a sample collection vessel to provide a liquid sample containing the recovered $^{14}CO_2$ for use in studies utilizing radioactive isotopes,

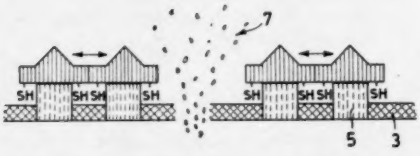
(h) and purging said combustion chamber, heat exchanger and trapping chamber between the combustion of successive isotope-containing samples.

4,148,609

METHOD FOR MEASURING ANTISTREPTOLYSIN CONCENTRATION IN BLOOD

Antonio Ricci, Monteriggioni, Italy, assignor to Istituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A., Siena, Italy

Filed Dec. 2, 1976, Ser. No. 747,048
Claims priority, application Italy, Dec. 22, 1975, 9660 A/75
Int. Cl.² G01N *33/16*
U.S. Cl. 23—230 B **1 Claim**



1. A method for measuring the antistreptolysin concentration in a sample of human blood, comprising the steps of:

(a) preparing a plurality of solutions of different concentrations of oxidized O-streptolysin;

(b) preparing a solution of a reducing substance selected from the group consisting of thiols, sodium metabisulfite and sodium sulfite;

(c) diluting a blood sample with a nonhemolytic solution;

(d) introducing an equal volume of diluted blood in each of the solutions prepared in step (a);

(e) incubating the solutions prepared in step (d) at a temperature in the range between room temperature (18° C.–21° C.) and 50° C. for about 15 minutes;

(f) adding to the incubating solutions prepared in step (e) a measured volume of the solution prepared in step (b);

(g) incubating the solution prepared in step (f) at a temperature in the range between room temperature and 50° C. for sufficient time to cause the sedimentation of the red blood cells to occur, and

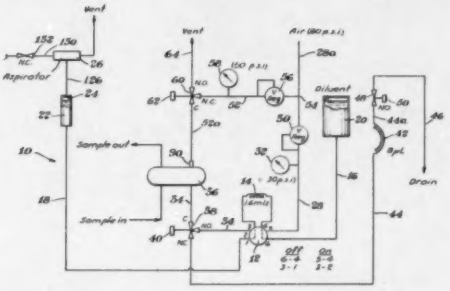
(h) noting the sample containers in which no hemolysis has taken place.

4,148,610

BATCH PREPARATION OF SAMPLES BY DILUTION

Theodore E. Miller, Jr., and Kenneth M. Cabala, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 3, 1978, Ser. No. 892,567
Int. Cl.² G01N *1/14*
U.S. Cl. 23—230 A **4 Claims**



1. Method for the batch preparation of analytically useful samples by dilution, said method being distinguished by the steps comprising, pneumatically transferring a metered amount of diluent through a relatively narrow tube into an expanded volume vented mixing chamber to deposit and entrap the diluent in said chamber, whereby the diluent is suspended in the chamber on the head of a moving gas column which produces bubbling agitation as it traverses the trapped diluent, and while in the agitated condition, introducing a metered amount of sample into the chamber and into contact with the agitated diluent to prepare a sample/diluent aliquot of controlled and precisely fixed ratio.

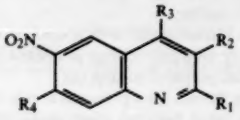
4,148,611

TEST COMPOSITION, DEVICE AND METHOD FOR THE DETECTION OF PEROXIDATIVELY ACTIVE SUBSTANCES

Shradha Nand, Elkhart, and Melvin D. Smith, Wakarusa, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jun. 28, 1978, Ser. No. 919,869
Int. Cl.² G01N *33/16, 21/06, 31/22*
U.S. Cl. 23—230 B **8 Claims**

1. A test composition for detection of peroxidatively active substances in body fluids, body excreta, and the like, of the type including an indicator capable of being oxidized in the presence of a peroxidatively active substance to provide color change, an oxidizing agent effective to oxidize said indicator, and a potentiating agent, wherein said potentiating agent comprises a compound having the formula:



wherein R_1 is hydrogen, a lower alkyl group of 1 to 4 carbon atoms or hydroxy, and R_2, R_3 and R_4 are independently selected from hydrogen or a lower alkyl group of 1 to 4 carbon atoms; provided that at most only one R group is substituted.

4,148,612

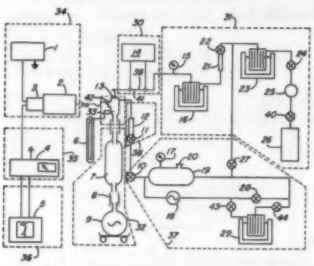
METHOD AND APPARATUS FOR DETECTING AND MEASURING TRACE IMPURITIES IN FLOWING GASES

Gene W. Taylor, and Edward J. Dowdy, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 659,439, Feb. 19, 1976, abandoned. This application Sep. 7, 1977, Ser. No. 831,196

Int. Cl.[2] G01J *3/34;* **G01N** *27/62*

U.S. Cl. 23—232 R **8 Claims**



1. A method for detecting and quantitatively measuring trace impurities in a flowing gas which comprises (a) forming an electronically metastable species which maintains a stable afterglow and which reacts with said trace impurities to ultimately produce radiating species particular to said impurities, (b) mixing said metastable species with said gas containing said trace impurities at known flow rates to produce said radiating species, said mixing occurring in a region downstream from and separate from the region wherein said metastable species is formed, (c) detecting and measuring the intensity of the radiations emitted by said radiating species, and (d) for each radiation corresponding to each impurity, comparing the measured radiation intensity to a predetermined calibration curve at the same flow rates to determine the quantitative amount of each impurity in said flowing gas.

4,148,613

PROCESS FOR PREPARING SULFUR-CONTAINING COAL OR LIGNITE FOR COMBUSTION

Gary A. Myers, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 27, 1977, Ser. No. 864,353

Int. Cl.[2] C10L *9/10, 9/00*

U.S. Cl. 44—1 R **7 Claims**

1. In a method of treating sulfur-containing coal or lignite to reduce SO_2 emissions during combustion thereof via admixing pulverized sulfur containing coal or lignite with an inorganic material selected from the group consisting of an oxide, hydroxide or carbonate of sodium, potassium, calcium or barium and dolomite in order to increase the SO_2 absorbency of said treated coal or lignite, the improvement comprises:

mixing said pulverized coal or lignite with a solution containing the chloride or nitrate of said inorganic material and subsequently contacting said mixture with a precipitating agent selected from the group consisting of CO_2, NH_4OH, $(NH_4)_2CO_3$, KOH, and NaOH thereby precipitating the oxide or hydroxide respectively of said inorganic material on said coal or lignite.

4,148,614

PROCESS FOR REMOVING SULFUR FROM COAL

Chalmer G. Kirkbride, 13 Elk Forest, R.D. #2, Elkton, Md. 21921

Filed Apr. 13, 1978, Ser. No. 896,003

Int. Cl.[2] C10L *9/10;* **C10B** *57/00;* **C10C** *1/08*

U.S. Cl. 44—1 R **8 Claims**

1. Process for reducing the sulfur and oxygen contents of coal which comprises drying coal particles to a free moisture content of below 0.5% by weight, subjecting a mixture of the dried coal slurried in liquid paraffinic hydrocarbons and hydrogen at a pressure of from 5 psi to 10,000 psi to microwave energy, and recovering coal having reduced sulfur and oxygen contents.

4,148,615

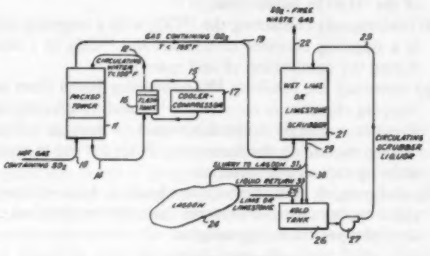
PREVENTION OF SCALE FORMATION IN WET LIME SCRUBBERS

Jagdish C. Agarwal, Concord; Richard A. Giberti, Waltham, and Louis J. Petrovic, Sudbury, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Continuation of Ser. No. 537,209, Dec. 30, 1974, abandoned. This application Mar. 30, 1976, Ser. No. 672,021

Int. Cl.[2] B01D *53/14*

U.S. Cl. 55—73 **3 Claims**



1. In a process for operating a power plant or reverberatory furnace whereby the flue gases or effluent gases are being treated for removal of sulfur dioxide, and a wet lime or limestone scrubber is used in which scale formation and/or encrustation are encountered, the improvement for avoiding said encrustations and/or scale formation comprising:

cooling said flue or effluent gases to a temperature of less than 105° F;

contacting said flue or effluent gases with an oxide, hydroxide, or carbonate of calcium, magnesium, or barium in an aqueous liquid as a scrubbing liquor for scrubbing the gas, said scrubbing liquor being at a temperature equal or less than the temperature of the flue or effluent gas, when said liquid leaves the scrubber;

venting the scrubbed gas to atmosphere;

depositing in a lagoon said aqueous solution containing the reaction products of sulfur dioxide with said scrubbing liquor and settling the same therein;

returning a settled liquid from said lagoon and augmenting the same with said oxide, hydroxide, or carbonate of calcium, magnesium, or barium;

and recirculating said augmented liquor to the scrubbing zone.

3. In a process for operating a power plant utilizing coal of high sulfur content, the process comprising the steps of:

combusting said coal in a furnace zone, cooling said combustion gases containing sulfur dioxide to a temperature less than 105° F., introducing said cooled gases in a wet lime or limestone scrubber, contacting said gases with a scrubbing liquor at an ambient temperature wherein the scrubbing liquor exit temperature from said wet lime or limestone scrubber is at most equivalent to the entering temperature of said hot gases in said scrubber and removing the reaction products from said scrubbing liquor while augmenting the scrubbing liquor with lime or limestone for recycling to said wet lime or limestone scrubber, whereby encrusting and scale formation within said scrubber is thereby avoided.

4,148,616

SCRUBBER FOR CONTAMINATED GAS

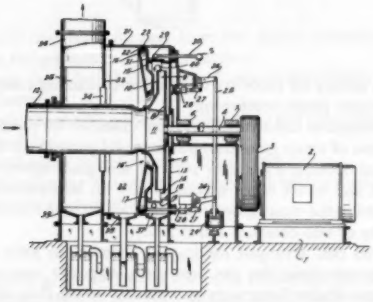
Heinrich Winters, Düsseldorf, Fed. Rep. of Germany, assignor to Büttner-Schilde-Haas AG, Krefeld, Fed. Rep. of Germany

Division of Ser. No. 564,837, Apr. 3, 1975. This application Jan. 10, 1977, Ser. No. 758,302

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1974, 2416958

Int. Cl.[2] B01D *47/00*

U.S. Cl. 55—226 **14 Claims**



1. A scrubber for contaminated gas, said scrubber comprising an inlet conduit having an outer end portion, an intermediate portion and an inner end portion; a housing surrounding the inlet conduit and having a first chamber at the inner end portion of said inlet conduit, a second chamber at the intermediate portion of said inlet conduit and a third chamber at the outer end portion of said inlet conduit; outlet means in said third chamber; a single impeller wheel communicating with the inner end portion of said conduit coaxially with the same and rotatably mounted in said first chamber; a wall defining with one transverse wall of the impeller wheel a passage having a radially outer end communicating with the first chamber and adjacent to the outer periphery of the impeller wheel and a radially inner end communicating with the second chamber; means for admitting contaminated gas through said inlet conduit to said wheel; means for spraying a washing liquid into the first chamber outwardly adjacent the outer periphery of the impeller wheel; means for displacing said wall axially relative to said one transverse wall of the impeller wheel so as to vary the axial dimension of said passage; and means for rotating said wheel about the axis thereof for displacing said contaminated gas centrifugally about said axis and towards said outer periphery of the impeller wheel, to be contacted by said washing liquid and for thereupon travelling through said passage into said second chamber where separation of the contaminants is effected so that the gas is scrubbed and then travels in clean condition to said third chamber to exit through said outlet means.

4,148,617

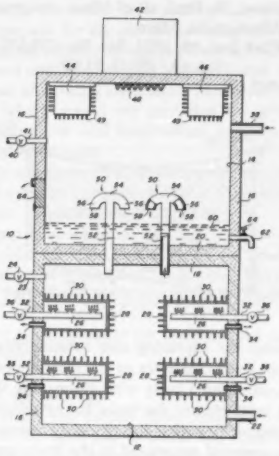
WATER RECOVERY DEVICE

John F. Clark, 733 NW. 12th Ave., Ft. Lauderdale, Fla. 33311

Filed Nov. 29, 1977, Ser. No. 855,615

Int. Cl.[2] B01D *53/00*; F25J *3/04*

U.S. Cl. 55—267 **2 Claims**



1. A device for recovering water from ambient air, comprising:

(a) first and second chambers with said second chamber positioned directly above said first chamber, said chambers having insulated walls;

(b) first pressurized ambient air supply means for pressurizing a stream of ambient air and supplying the stream of pressurized ambient air to said first chamber;

(c) heating means positioned about said first chamber for indirectly heating the pressurized ambient air in said first chamber;

(d) first chamber pressure regulatory means for maintaining the air pressure in said first chamber at a pressure of at least 20 pounds per square inch;

(e) second pressurized ambient air supply means for pressurizing a stream of ambient air and supplying the stream of pressurized ambient air to said second chamber;

(f) cooling means positioned about said second chamber for indirectly cooling the pressurized ambient air in said second chamber;

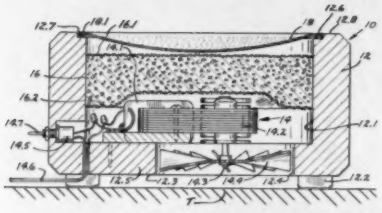
(g) second chamber pressure regulatory and air exhaust means for maintaining the air pressure in said second chamber at a pressure of at least 20 pounds per square inch but less than the pressure being maintained in said first chamber and for exhausting air from said second chamber;

(h) at least one conduit assembly interconnecting said first chamber and said second chamber, each said at least one conduit assembly having a substantially vertically disposed conduit and a generally horizontally disposed conduit, said vertically disposed conduit having a lower end positioned in said first chamber adjacent to the top thereof and an upper end positioned in said second chamber, said horizontally disposed conduit being connected at its midportion to said upper end of said vertically disposed conduit and having downwardly curving ends with openings at said ends facing generally downwards so that, with the pressure gradient between said chambers, heated pressurized ambient air flows through said at least one conduit assembly and is downwardly discharged from said horizontally disposed conduit openings to contact the cooled pressurized ambient air of said second chamber resulting in the condensation of the moisture contained in the air; and,

(i) collecting and removing means for collecting the con-

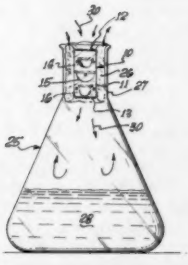
densed water in said second chamber and removing the condensed water from said second chamber.

4,148,618
ASHTRAY
David N. Christenson, Stacy; Frank A. Freeman, Eagan, and Joseph T. Foley, St. Paul, all of Minn., assignors to Smoketray, Inc., Minneapolis, Minn.
Filed Dec. 15, 1976, Ser. No. 750,872
Int. Cl.[2] B01D *50/00*
U.S. Cl. 55—385 G 10 Claims



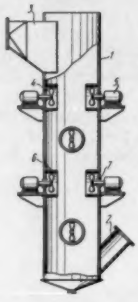
1. An ashtray for capturing and substantially eliminating odors of smoke from cigarettes or the like supported thereon, the ashtray comprising a body with an opening therethrough, lower means supported in the body for establishing a downwardly directed air flow through the body opening, a layer of odor treating material supported in the body opening in the path of the air flow, and a substantially horizontal metal top covering the opening upon which the burning end of a cigarette or the like may be rested, said top having a large plurality of small holes therethrough of a size and quantity sufficient to substantially prevent the passage of cigarette ashes through the top but to permit sufficient downward air flow through the body opening to entrain the smoke from a cigarette or the like resting on the top and to pass the smoke through the odor-treating material.

4,148,619
FLASK AND MECHANICAL AERATOR
Daniel H. Deutsch, 141 Kenworthy Dr., Pasadena, Calif. 91105
Filed Aug. 19, 1977, Ser. No. 825,944
Int. Cl.[2] B01D *50/00*
U.S. Cl. 55—385 R 10 Claims



1. An apparatus for moving gas downwardly into the neck of a shaking flask, said apparatus comprising:
- a shaking flask having a neck portion;
- an aerator supported in the neck of said flask, said aerator having a gas-impervious exterior wall having an opening at the upper and lower ends thereof; and
- at least one free-swinging, hingedly-supported, downwardly-depending member affixed within said wall, whereby the shaking of the flask causes the member to swing back and forth resulting in a fanning action thus moving gas downwardly through the openings in the wall.

4,148,620
DEVICE INCLUDING OPPOSED FAN PAIRS PRECIPITATING CHLORINE-CONTAINING COMPOUNDS FROM WASTE GASES
Boris I. Nudelman; Vitaly I. Lisbaron; Vyacheslav P. Kortnev; Valentina P. Sharova; Vakel K. Imangulov, and Anatoly I. Afanasiev, all of Tashkent, U.S.S.R., assignors to Tashkentsky Nauchno-Issledovatelsky i Proektny Institut Stroitelnykh Materialov "Niistromproekt", U.S.S.R.
Filed Jun. 29, 1977, Ser. No. 811,388
Claims priority, application U.S.S.R., Nov. 16, 1976, 2417339[I]
Int. Cl.[2] B01D *45/00*
U.S. Cl. 55—403 6 Claims



1. A device for recovery of chlorine-containing compounds from waste gases, comprising:
- an elongated substantially vertical chamber for passage of a flow of waste gases transporting solid particles in the flow and defining a gas flow path for said gases upwardly;
- inlet and outlet pipes spaced axially on said chamber, for letting the waste gases in and out, adjacent the bottom and top of said chamber respectively;
- driven fans arranged inside said chamber in pairs axially spaced along the gas flow path, opposite one another, their blades being arranged parallel to the flow of waste gases along said gas flow path through said chamber and driven simultaneously to develop opposed flow streams flowing opposite to each other and normal to the waste gas flow.

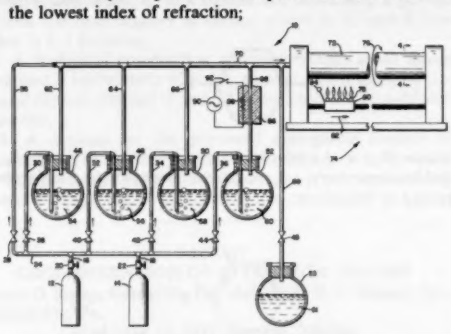
4,148,621
METHOD FOR MAKING GLASS OPTICAL FIBERS
Georg Gliemeroth, Mainz, Fed. Rep. of Germany, assignor to Jenaer Glaswerk Schott & Gen., Fed. Rep. of Germany
Filed Oct. 14, 1976, Ser. No. 732,197
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1975, 2546162
Int. Cl.[2] C03B *37/00*
U.S. Cl. 65—3 A 15 Claims

2. A process for producing an optical fiber comprising a sheath, an optical isolation zone, and a light-guiding core having a parabolic refractive index profile, said process comprising the steps of:

I. depositing a plurality of layers of oxides inside a tube to form the optical isolation zone, said oxides comprising:
- A. silicon dioxide, and
- B. boron oxide, wherein the boron oxide is present in an amount such that its mixture with silicon dioxide has a refractive index lower than that of silicon dioxide and then;

II. depositing a plurality of layers of oxides on the optical isolation zone to form the light-guiding core, said oxides comprising:
- A. silicon dioxide, and

B. at least two oxides selected from the group consisting of:
(1) germanium dioxide,
(2) phosphorus pentoxide, and
(3) boron oxide, in an amount such that its mixture with silicon dioxide has a refractive index greater than that of silicon dioxide,
C. an oxide selected from the group consisting of oxides of antimony, tin, sodium, tungsten and mixtures thereof,
wherein that layer adjacent to the optical isolation zone has the lowest index of refraction;



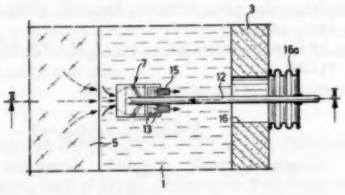
wherein that layer furthest from the optical isolation zone has the greatest index of refraction;
wherein the index of refraction of intermediate layers varies linearly;
wherein the sheath optical isolation zone and core constitute a preform;
III. collapsing the preform to form a rod;
IV. drawing the rod into an optical fiber having a parabolic refractive index profile.

4,148,622

PROCESS AND APPARATUS FOR THE PRODUCTION OF FLAT GLASS BY THE FLOAT GLASS METHOD

Xaver Heitzer, Cologne; Gunther Henseler, Hoffnungsthal, and Hans Sustmann, Cologne, all of Fed. Rep. of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Feb. 28, 1977, Ser. No. 772,952
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1976, 2608052
Int. Cl.² C03B *18/02*
U.S. Cl. 65—99 A **8 Claims**



1. In the process for the production of a glass ribbon by the float glass method wherein the glass ribbon is formed on a bath of molten metal contained within a tank, floated along on top of the bath, and after being sufficiently hardened, drawn off the bath, and in which transverse and longitudinal currents are generated and maintained in the bath, the improvement comprising the step of:
(a) pneumatically pumping a predetermined capacity of molten metal from a location submerged in said bath between the glass ribbon and the side walls of the tank to generate said currents, the pneumatic pumping being effected by:
(1) pumping gas downwardly into the bath at one point,
(2) directing the gas through a portion of the bath in the direction of the desired current,
(3) pumping the gas along with molten metal upwardly to a level above the normal level of the bath, and
(4) returning the removed molten metal to the bath.

6. In an apparatus for the production of glass ribbon by the float glass method wherein the glass ribbon is formed on a bath of molten metal contained within a tank, floated along on top of the bath and, after being sufficiently hardened, drawn off the bath and in which means are provided for generating and maintaining transverse and longitudinal currents in the bath, the improvement wherein:
(a) said means includes fluid pumping devices submerged in said bath between the glass ribbon and the side walls of the tank, each of said devices comprising:
(1) a pump housing made of a material compatible with the molten metal,
(2) a blade wheel disposed within said housing with the lower half of the blade immersed in the molten metal bath,
(3) one or more inlets for the molten metal on one side of the housing,
(4) one or more outlets for the molten metal on another side of the housing,
(5) said inlets and outlets being located at a submerged level in the bath and at about the same depth of the bottommost section of the blade wheel, and
(6) a nozzle positioned in the upper part of the pump housing in alignment with the upper half of the blade wheel to direct gases against the blades disposed above the level of the bath to rotate the blade wheel.

7. In an apparatus for the production of glass ribbon by the float glass method wherein the glass ribbon is formed on a bath of molten metal contained within a tank, floated along on top of the bath and, after being sufficiently hardened, drawn off the bath and in which means are provided for generating and maintaining transverse and longitudinal currents in the bath, the improvement wherein:
(a) said means for generating and maintaining the transverse currents includes fluid pumping devices submerged in said bath between the glass ribbon and each of the side walls of the tank and at a plurality of locations spaced longitudinally along said bath, each of said pumping devices comprising:
(1) a pump housing made of a material compatible with the molten metal,
(2) one or more inlets for the molten metal on one side of the housing facing the central longitudinal axis of the bath,
(3) one or more outlets for the molten metal on another side of the housing facing the adjacent side wall of the tank, and
(4) pumping means for pumping molten metal through said housing at a variable rate from the inlets to the outlets thereof to generate the transverse currents in the bath and flow of molten metal at each of said locations from the center of the bath underlying the glass ribbon toward the side walls of the tank and mixing thereof with the normal cold return flow along said side walls.

4,148,623

CONTROLLED RELEASE FERTILIZER

Cyril F. Drake, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 22, 1977, Ser. No. 853,934
Int. Cl.² C05B *7/00*; C01B *21/06*
U.S. Cl. 71—32 **5 Claims**

1. A controlled release fertilizer composition comprising a water soluble glass containing phosphorus oxynitride together

with an alkali metal oxide, phosphorus pentoxide and an oxide of a metal of Group II or III of the periodic table.

4,148,624

GLYCYLMETHYLPHOSPHINIC ACIDS AND DERIVATIVES AS PLANT GROWTH REGULANTS

Ludwig Maier, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

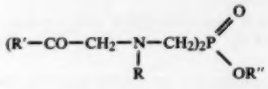
Filed Mar. 30, 1978, Ser. No. 891,578

Claims priority, application Switzerland, Apr. 1, 1977, 4123/77

Int. Cl.[2] A01N *9/36;* **C07F** *9/30*

U.S. Cl. 71—86 **6 Claims**

1. Glycylmethylphosphinic acid derivatives of the formula Ia

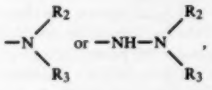


(Ia)

and the salts thereof, wherein

R represents hydrogen, C_1–C_6 alkyl or mono- to triphenylated methyl,

R′ represents —OH or —OR_1, wherein R_1 represents a cation, substituted or unsubstituted C_1–C_6alkyl, cycloalkyl,



in which each of R_2 and R_3 independently represents hydrogen, lower alkyl or cyanoalkyl, R_3 additionally represents phenyl which is unsubstituted or substituted by halogen lower alkyl or nitro, and

R″ represents hydrogen, a cation, alkyl, alkenyl, aryl or aralkyl.

6. A method of inhibiting the growth of mono- and dicotyledonous plants which comprises applying to the plants or the locus thereof either before or after emergence, a plant growth inhibiting amount of the active compound of the formula Ia of claim 1.

4,148,625

TETRAHYDROISOPHTHALIMIDE COMPOUNDS

Hiroshi Nagase, Kawanishi, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

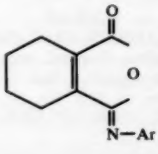
Filed Jul. 13, 1977, Ser. No. 815,370

Claims priority, application Japan, Jul. 23, 1976, 52-88414

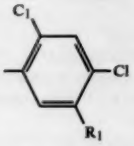
Int. Cl.[2] A01N *9/20;* **C07D** *307/88*

U.S. Cl. 71—88 **23 Claims**

1. A compound of the formula

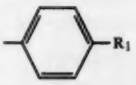


wherein Ar is:



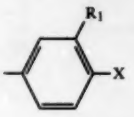
A)

where R_1 is alkoxy or alkenyloxy having 1 to 5 carbon atoms;



B)

where R_1 is 4-methylbenzyloxy, 4-nitrobenzyloxy, 2, 4-dichlorobenzyloxy, 3, 4-dichlorobenzyloxy, 4-chlorobenzyloxy or benzyloxy; or



C)

where X is chlorine or bromine and R_1 is alkoxy or alkenyloxy having 1 to 5 carbon atoms.

22. A composition for the control of undesirable vegetation which comprises an effective amount of the compound of claim 1 and at least one of an emulsifier and a solid or liquid carrier.

23. A method of controlling weeds comprising applying an effective amount of the composition of claim 22 to the area to be controlled.--

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4,148,626

HERBICIDAL AGENTS

Robert F. Brookes, Tollerton; David H. Godson, Chilwell; Douglas Greenwood, Nottingham; Margaret Tulley, Mapperley, and Stanley B. Wakerley, Burton Joyce, all of England, assignors to The Boots Company Limited, Nottingham, England

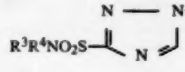
Division of Ser. No. 603,572, Aug. 11, 1975, Pat. No. 4,087,269, which is a division of Ser. No. 317,453, Dec. 21, 1972, Pat. No. 3,952,001, which is a continuation-in-part of Ser. No. 261,206, Jun. 9, 1972, abandoned, which is a continuation-in-part of Ser. No. 153,448, Jun. 15, 1971, abandoned. This application Nov. 7, 1977, Ser. No. 849,367

Claims priority, application United Kingdom, Jul. 1, 1970, 31922/70; Mar. 31, 1971, 8275/71; Dec. 31, 1971, 61022/71; Dec. 31, 1971, 61023/71

Int. Cl.[2] A01N *9/16;* **C07D** *249/12, 401/12, 403/12*

U.S. Cl. 71—92 **14 Claims**

1. A compound of the general formula



in which R^1 is alkyl containing 1–2 carbon atoms, allyl, 2-methylallyl, prop-2-ynyl, alkoxyalkyl containing 2–4 carbon atoms, haloalkyl containing 1–4 carbon atoms, 2-haloallyl, 2,3-dihaloallyl or cyclopropyl, R^2 is alkyl containing 2–8 carbon atoms, alkenyl containing 2–8 carbon atoms, alkenyloxyalkyl containing 4–8 carbon atoms, haloalkyl containing 2–8 carbon atoms, 2-haloallyl, 2,3-dihaloallyl, cyclopropyl or cyclohexyl, R^3 is alkyl containing 1–4 carbon atoms, allyl, 2-methylallyl, prop-2-ynyl, alkoxyalkyl containing 2–4 carbon atoms, haloalkyl containing 1–4 carbon atoms, 2-haloallyl, 2,3-dihaloallyl, cyclopropyl or phenyl containing 1–3 halo

substituents, R^4 is alkyl containing 1–8 carbon atoms, alkenyl containing 2–8 carbon atoms, alkoxyalkyl containing 2–8 carbon atoms, alkenyloxyalkyl containing 4–8 carbon atoms, haloalkyl containing 1–8 carbon atoms, 2-haloallyl, 2,3-dihaloallyl, cyclopropyl or cyclohexyl, or R^3 and R^4, together with the nitrogen atom to which they are attached, form a heterocyclic ring, optionally containing 1–4 lower alkyl substituents, selected from morpholino, pyrrolidino, 1-piperidinyl, hexamethyleneimino and heptamethyleneimino, provided that the total number of carbon atoms is R^1 and R^2 together is 3–9 inclusive, and when R^3 is a radical not containing a phenyl nucleus, the total number of carbon atoms in R^3 and R^4 together is 2–9 inclusive.

9. A herbicidal composition which comprises as an active ingredient a herbicidally effective amount of a triazole of the general formula defined in claim 1 in association with a diluent or carrier.

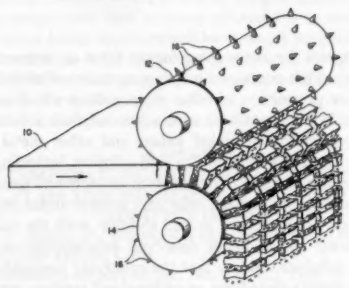
11. A method for the pre-weed emergence control of graminaceous weeds which comprises applying to the locus of the weeds a herbicidally effective amount of a triazole of the general formula defined in claim 1.

4,148,627

AGGLOMERATION OF STEEL MILL WASTES

George D. Haley, Greenville, Pa., assignor to R. C. Metals, Inc., Greenville, Pa.

Filed May 23, 1977, Ser. No. 799,554
Int. Cl.[2] B02C *18/28*; C22B *1/243*
U.S. Cl. 75—3 4 Claims



1. A method for agglomerating steel mill ferrous wastes comprising mixing said wastes with water and Portland cement, pouring the mixture into a mold to form, after hardening of the cement, a slab having a thickness no greater than the maximum dimension of the desired agglomerated fragments, and thereafter breaking said slab into fragments of desired size by passing it through a flake breaker which fractures said slab into fragments having a maximum dimension not greater than the thickness of said slab.

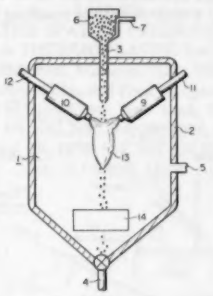
4,148,628

PROCESS OF PRODUCING METALLIC CHROMIUM

Takumi Fukunishi, Machida, and Masamichi Miura, Sagamihara, both of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Feb. 15, 1978, Ser. No. 878,080
Claims priority, application Japan, Feb. 18, 1977, 52-16026; Feb. 21, 1977, 52-17214; Feb. 21, 1977, 52-17215
Int. Cl.[2] C22B *39/00*
U.S. Cl. 75—10 R 12 Claims

1. In a process of producing metallic chromium by carbon reduction of chromium oxide wherein a mixture of chromium oxide and carbon is exposed to an elevated temperature of at least 1,200° thereby to reduce the chromium oxide, and the thus reduced metallic chromium product is recovered, the improvement comprising conducting said process using granules having an average particle size of from 0.01 to 3 mm prepared from a mixture of a finely divided chromium oxide, a



finely divided carbon and a binder are passed, while being carried by a gas stream, through a plasma flame.

4,148,629

PROCESS FOR CONTROLLING A STEEL REFINING PROCESS FOR STEELS HAVING A CARBON CONTENT WITHIN THE RANGE OF 0.1 TO 0.8 % BY WEIGHT

Klaus Kammerhofer, Leoben, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerk-Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed Jul. 26, 1977, Ser. No. 819,097
Claims priority, application Austria, Aug. 4, 1976, 5782/76
Int. Cl.[2] C21C *5/30*
U.S. Cl. 75—52 21 Claims

1. In a blowing process for refining and producing steels having a carbon content ranging from 0.1 to 0.8% by weight, during which blowing process lime, ore and fluxes are added to the metal bath of the refining vessel to control the composition of the ultimate steel product, the improvement comprising

undertaking said oxygen-blowing in two immediately successive stages, the amount of blowing oxygen being constant within each of said stages, wherein

in the first of said stages, all of said lime, ore and fluxes are added and oxygen is supplied to said bath in an amount which is directly proportional to the Si and Mn content of pig iron in said bath and wherein the duration of said first stage is inversely related to the rate of oxygen flow; and

in the second of said stages, the duration of the oxygen flow is inversely related to the rate of oxygen flow and the amount of oxygen in said second stage is sufficient to cause the slag to become saturated in both lime and dicalciumsilicate wherein the slag basicity is at least 2.8 and wherein a minimum slag content of 50 kg/ton of pig iron is maintained, while maintaining the concentration of P and Mn of the pig iron in said bath so that the ultimate steel product of the second stage has a maximum P content of 0.04% by weight and a minimum Mn content of 0.2% by weight.

4,148,630

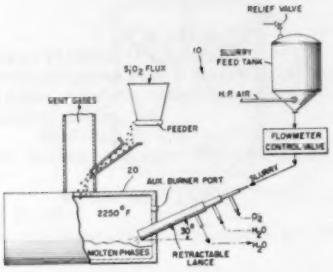
DIRECT PRODUCTION OF COPPER METAL

Charles Arentzen, Tucson, Ariz., assignor to The Anaconda Company, Denver, Colo.

Filed Aug. 24, 1977, Ser. No. 827,359
Int. Cl.[2] C22B *15/00*
U.S. Cl. 75—74 9 Claims

1. A process for the direct production of copper metal from a cupriferous slurry comprising forming a molten bath of cupriferous material at a temperature of about 2100° to 2400° F., at least one of said bath and said slurry comprising sufficient sulfidic materials to develop and maintain said bath temperature by oxidation of said sulfidic material, injecting an oxygen-containing gas and said cupriferous slurry into said molten

bath, said injection being accomplished by use of a high-velocity stream of said gas and slurry directed at the surface of said bath at an angle of from about 20° to 40° from the horizontal, and separately withdrawing the resulting slag and metallic



copper from the bath, the proportion of slurry and volume of oxygen injected being adjusted with respect to the available sulfidic material to permit operation at a temperature range of from about 2100° to 2400° F.

4,148,631

STRIPPING OF COBALT FROM NICKEL-COBALT LOADED ORGANIC

Juraj Babjak; Victor A. Ettel, both of Mississauga, and Kenneth R. Dymock, Oakville, all of Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Jul. 27, 1978, Ser. No. 928,401
Claims priority, application Canada, Dec. 28, 1977, 293967
Int. Cl.[2] C22B *23/04*
U.S. Cl. 75—101 BE **12 Claims**

1. A process for treating an aqueous sulfate solution containing nickel and cobalt to separate said metals from one another comprising:

I. contacting the sulfate solution with an organic solution containing a non-chelating cationic extractant selected from acids which are organic-soluble in both their free acid and metal salt forms and are effective to extract nickel and cobalt from the sulfate solution;

II. contacting the nickel- and cobalt-loaded organic solution obtained in Step (I) with an aqueous back-extraction solution wherein the anionic species comprise chloride, thiocyanate or a mixture thereof and the cationic species comprise at least one of nickel, alkali metals and alkaline earth metals, providing the total concentration of anions is at least 3 M and the concentration of nickel cations is at least 0.8 M, whereby substantially all of the cobalt is back-extracted from the organic solution into the aqueous solution;

III. stripping of nickel from the cobalt-free organic solution obtained in Step (II), thereby regenerating the organic solution for recycling to perform Step (I);

IV. subjecting the nickel- and cobalt-containing back-extraction aqueous solution obtained from Step (II) to a solvent extraction or ion exchange treatment with an anionic extractant to extract cobalt preferentially therefrom; and

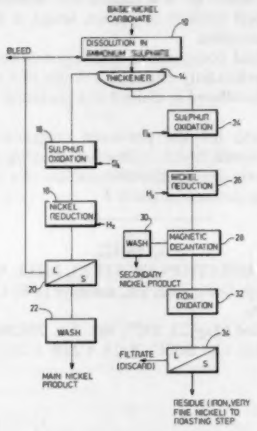
V. stripping cobalt from the anionic extractant used in Step (IV) to obtain an aqueous phase containing said cobalt and regenerated extractant for recycling to perform Step (IV).

4,148,632

TREATMENT OF DISSOLVED BASIC NICKEL CARBONATE TO OBTAIN NICKEL

Willie Seibt, Edmonton, and Donald R. Weir, Fort Saskatchewan, both of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed May 10, 1978, Ser. No. 904,659
Claims priority, application Canada, Nov. 2, 1977, 290042
Int. Cl.[2] C22B *23/04*
U.S. Cl. 75—119 **8 Claims**



1. A process for recovering nickel from an impure nickel compound which contains a major proportion of nickel values and a minor proportion of other metal values which are relatively soluble in ammoniacal ammonium sulphate solution, and a minor proportion of nickel values and other metal values which are relatively insoluble in said solution, including treating said impure nickel compound with ammoniacal ammonium sulphate solution so that the relatively soluble nickel and other metal values are dissolved in said solution with the relatively soluble nickel values being dissolved substantially as nickel diammine sulphate, and so that the relatively insoluble nickel and other metal values form an undissolved residue, separating the residue from most of the ammoniacal ammonium sulphate solution so as to provide a substantially residue-free solution of nickel diammine sulphate and relatively soluble other metal values on the one hand and a slurry of said residue of undissolved nickel and other metal values and said solution on the other hand, subjecting the substantially residue-free solution to a reducing operation by hydrogen gas to produce precipitation of elemental nickel powder from said residue-free solution, separating said elemental nickel powder from said residue-free solution to produce a first nickel powder product, subjecting said slurry to a reducing operation by hydrogen gas to produce precipitation of elemental nickel powder from said slurry, and separating said elemental nickel powder from said slurry to produce a second nickel powder product.

4,148,633

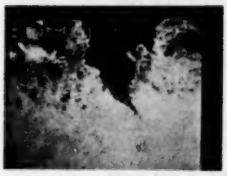
MINIMIZATION OF EDGE CRACKING DURING HOT ROLLING OF SILICON-TIN BRONZES

Prakash D. Parikh, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Oct. 26, 1977, Ser. No. 845,470
Int. Cl.[2] C22C *9/02*; C22F *1/08*
U.S. Cl. 75—154 **11 Claims**

1. An alloy which exhibits high resistance to edge cracking

during hot working, said alloy consisting essentially of 2 to 4.0% by weight silicon, 0.5 to 3.0% by weight tin, with a total silicon plus tin content to less than or equal to 6.0% by weight, 0.005 to 0.1% by weight mischmetal, balance copper.



ALLOY WITHOUT MISCHMETAL

ALLOY WITH MISCHMETAL

4,148,634

MACHINABILITY OF ALLOY 688 AND MODIFIED 688 THROUGH THE ADDITION OF Pb

Warren F. Smith, Jr., Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Dec. 7, 1977, Ser. No. 858,116
Int. Cl.² C22C 9/04
U.S. Cl. 75—157.5 **13 Claims**

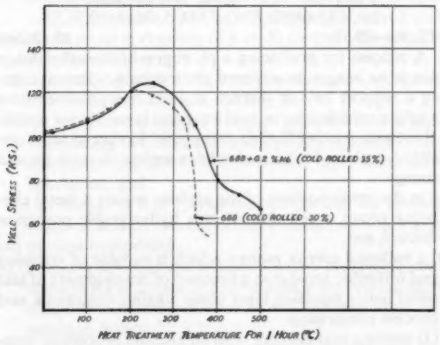
1. A copper base alloy consisting essentially of from 66 to 80% by weight copper, from 15 to 32.5% by weight zinc, from 1 to 5% by weight aluminum, an element selected from the group consisting of 0.1 to 3% by weight for any of cobalt, titanium and chromium, 0.2 to 5% by weight nickel and 0.2 to 1.5% by weight iron, and between 1% and 4% by weight lead, the said alloy being characterized by strength properties essentially the same as in an alloy having the same composition as said alloy without lead, together with substantial improvement thereover in its machinability.

4,148,635

HIGH TEMPERATURE SOFTENING RESISTANCE OF ALLOY 688 AND MODIFIED 688 THROUGH THE ADDITION OF Nb

Warren F. Smith, Jr., Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 839,822, Oct. 6, 1977, abandoned. This application Dec. 5, 1977, Ser. No. 857,389
Int. Cl.² C22C 9/04
U.S. Cl. 75—157.5 **10 Claims**



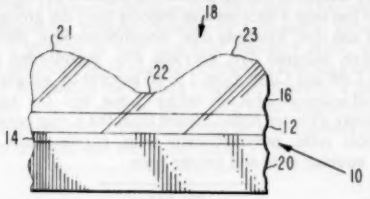
1. A copper base alloy which exhibits improved resistance to softening at high temperatures as well as improved stress corrosion and stress relaxation resistance properties, said alloy consisting essentially of from 66 to 80% by weight copper, from 15 to 32.5% by weight zinc, from 1 to 5% by weight aluminum, an element selected from the group consisting of 0.1 to 3% by weight for any of cobalt, titanium and chromium, 0.2 to 5% by weight nickel and 0.2 to 1.5% by weight iron, and from 0.02 to 1% by weight niobium.

4,148,636

BROADENING THE SPATIAL FREQUENCY PASS BAND OF A THERMOPLASTIC LAYER

Thomas L. Credelle, East Windsor, N.J.; William J. Hannan, Palm Beach Gardens, Fla., and Fred W. Spong, Lawrenceville, N.J., assignors to RCA Corp., New York, N.Y.

Division of Ser. No. 653,288, Jan. 29, 1976. This application Aug. 29, 1978, Ser. No. 937,835
Int. Cl.² G03G 16/00
U.S. Cl. 96—1.1 **4 Claims**



1. In the method of recording a hologram of an image in a medium wherein an electrically conductive layer has first and second surfaces connected to one surface of a photoconductor layer and a surface of a substrate, respectively, the steps of:

providing a thermoplastic layer of substantially uneven thickness that causes said thermoplastic layer to have a multiplicity of frost frequencies;

disposing said thermoplastic layer upon the other surface of said photoconductor layer, whereby said photoconductor layer is between said conductive layer and said thermoplastic layer and said thermoplastic layer has a surface abutting said photoconductor layer and a free surface;

maintaining a uniform voltage between said conductive layer and said free surface, thereby providing a charged assembly;

providing an interference pattern of light representative of said image to said photoconductor layer in said charged assembly; and

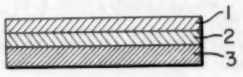
applying heat to said charged assembly.

4,148,637

SILANE COUPLING AGENT IN PROTECTIVE LAYER OF PHOTOCONDUCTIVE ELEMENT

Tomio Kubota; Akio Kojima, and Yoshikazu Kaneko, all of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 503,085, Sep. 4, 1974, abandoned. This application Jan. 7, 1977, Ser. No. 757,591
Claims priority, application Japan, Sep. 4, 1973, 48-98804; Nov. 23, 1973, 48-131417; Dec. 24, 1973, 49-143439; Dec. 25, 1973, 49-4022; Dec. 25, 1973, 49-4023; Dec. 25, 1973, 49-4024; Jan. 14, 1974, 49-7230
Int. Cl.² G03G 5/14
U.S. Cl. 96—1.5 N **8 Claims**



1. A photosensitive material for use in electrophotography comprising an electrically conductive support having a photoconductive layer overcoated thereon with a protective layer wherein said protective layer is composed of a film forming, transparent resin and, based on the total weight of the protective layer, from about 0.01 wt.% to 10 wt.% of a silane-coupling agent.

4,148,638

PHOTOCONDUCTIVE SENSITIVE MATERIAL WITH A TRINITRO-11-INDENO[1,2-b]QUINOXALINE-11-ONE

Masafumi Ohta; Mitsuru Hashimoto, and Akio Kozima, all of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1977, Ser. No. 775,049
Claims priority, application Japan, Mar. 11, 1976, 51-26396
Int. Cl.[2] G03G 5/06, 5/04, 5/09
U.S. Cl. 96—1.5 R 22 Claims

1. An electrophotographic plate comprising an electrically conductive support coated with a photoconductive layer having a thickness of from 5 to 100 microns, said photoconductive layer consisting essentially of a mixture of from 0.1 to 30 percent by weight of charge-generating pigment having a particle size of less than 5 microns and selected from the group consisting of azo dye, xanthene dye, violanthrone dye, phthalocyanine dye, indigoid dye, perylene dye, indanthrone dye, Se, SeTe, CdS and CdSe, from 1 to 60 percent by weight of trinitro-11H-indeno[1,2-b]quinoxaline-11-one and the balance is essentially a binder resin selected from the group consisting of polyester resin, polycarbonate resin, acrylic resin, silicone resin, novolac resin and ketone resin.

4,148,639

WATER-INSENSITIVE ELECTROCONDUCTIVE POLYMERS

Gloria D. Sinkovitz, Bridgeville, and Kenneth W. Dixon, Sewickley, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1978, Ser. No. 872,845
Int. Cl.[2] G03G 5/04
U.S. Cl. 96—1.5 R 8 Claims

1. An electroconductive paper which contains a layer of a coating composition which contains a water-insensitive copolymer of a cationic monomer selected from the group consisting of methacrylamidopropyltrimethylammonium chloride, methacryloxyethyl trimethylammonium chloride, methacryloxyethyl trimethylammonium methosulfate, 2-hydroxy-3-methacryloxypropyl trimethylammonium chloride, quaternized 4-vinylpyridine and a crosslinable comonomer.

8. A method of making electroconductive paper which comprises coating said paper with at least 0.1 pound per 3000 square feet of a water-insensitive copolymer of a catonic monomer selected from the group consisting of methacrylamidopropyltrimethylammonium chloride, methacryloxyethyl trimethylammonium chloride, methacryloxyethyl trimethylammonium methosulfate, 2-hydroxy-3-methacryloxypropyl trimethylammonium chloride, vinylbenzyl trimethylammonium chloride, quaternized 4-vinylpyridine and a crosslinkable comonomer.

4,148,640

DEVELOPER COMPOSITIONS HAVING ELECTRICALLY CONDUCTING FILAMENTS IN CARRIER PARTICLE MATRIX

William J. Dulmage, and Alfred E. Fields, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 11, 1974, Ser. No. 450,028
Int. Cl.[2] G03G 13/08, 9/10
U.S. Cl. 96—1 SD 20 Claims

14. An electrophotographic process which comprises forming an electrostatic image on a photoconductor and developing the image with a dry developer comprising a mixture of toner powder particles and non-metallic carrier particles, each of said carrier particles containing a matrix having uniformly distributed therein tendrillar electrically conductive filaments extending at least through the surface of said particles, said matrix and filaments being triboelectrically different from said toner powder particles, and said matrix and filaments having a triboelectric relationship of like polarity with respect to said toner powder particles.

4,148,641

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE PYRIDYLAZOPYRAZOLE OR PYRIMIDYLAZOPYRAZOLE DYE-RELEASING COMPOUNDS

James A. Green, II, Chino, Calif., and Norman W. Kalenda, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 12, 1977, Ser. No. 832,310
Int. Cl.[2] G03C 7/00, 5/54, 1/40, 1/10
U.S. Cl. 96—29 D 33 Claims

32. A process for producing a photographic transfer image in color in an imagewise-exposed photographic element comprising a support having thereon at least one photographic silver halide emulsion layer, said emulsion layer having associated therewith a nondiffusible compound having at least one releasable 4-(2-pyridylazo)pyrazole or 4-(2-pyrimidylazo)-pyrazole dye moiety, said compound containing:

(A) in the ortho position of the azopyrazole moiety a metal chelating group, a salt thereof or a hydrolyzable precursor thereof, and

(B) a ballasted carrier moiety which is capable of releasing said diffusible azo dye as a function of development of said silver halide emulsion layer under alkaline conditions, said process comprising:

(1) treating said photographic element with an alkaline processing composition in the presence of a silver halide developing agent to effect development of each of the exposed silver halide emulsion layers;

(2) said dye-releasing compound then releasing said diffusible azo dye imagewise as a function of said development of each of said silver halide emulsion layers;

(3) at least a portion of said imagewise distribution of said azo dye diffusing to a dye image-receiving layer; and

(4) contacting said imagewise distribution of said azo dye with metal ions, thereby forming a metal-complexed, azo dye transfer image.

4,148,642

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NONDIFFUSIBLE 1-ARYLAZO-4-ISOQUINOLINOL DYE-RELEASING COMPOUNDS

Derek D. Chapman; James A. Friday, both of Rochester, and James K. Elwood, Victor, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1978, Ser. No. 884,469
Int. Cl.[2] G03C 1/40, 7/00, 5/54, 1/10
U.S. Cl. 96—29 D 35 Claims

32. A process for producing a photographic transfer image in color in an imagewise-exposed photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer, said emulsion layer having associated therewith a nondiffusible compound having at least one diffusible 1-arylazo-4-isoquinolinol dye moiety, said compound containing:

(A) in the ortho position of the arylazo moiety a metal chelating group, a salt thereof or a hydrolyzable precursor thereof; and

(B) a ballasted carrier moiety which is capable of releasing said diffusible azo dye as a function of development of said silver halide emulsion layer under alkaline conditions, said process comprising:

(1) treating said element with an alkaline processing composition in the presence of a silver halide developing agent to effect development of each of the exposed silver halide emulsion layers;

(2) said dye-releasing compound then releasing said diffusible azo dye imagewise as a function of said development of each of said silver halide emulsion layers;

(3) at least a portion of said imagewise distribution of said azo dye diffusing to a dye image-receiving layer; and

(d) contacting said imagewise distribution of said azo dye in said dye image-receiving layer with metal ions, thereby forming a metal-complexed azo dye transfer image.

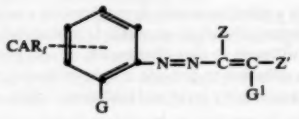
4,148,643

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NONDIFFUSIBLE AZO DYE-RELEASING COMPOUNDS

Derek D. Chapman, Rochester, and E-Ming Wu, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

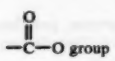
Filed Apr. 3, 1978, Ser. No. 892,561
Int. Cl.[2] G03C *1/40, 7/00, 5/54, 1/10*
U.S. Cl. 96—29 D **35 Claims**

32. A process for producing a photographic transfer image in color in an imagewise-exposed photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer, said emulsion layer having associated therewith a nondiffusible dye-releasing compound having at least one diffusible azo dye moiety, said compound having the formula:

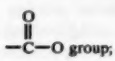


wherein:

G is a metal chelating group, a salt thereof or a hydrolyzable precursor thereof; or a group which together with a



is CAR, said CAR being bonded to the benzene ring through the oxygen of said



G^1 is a hydroxy group, a salt thereof, or a hydrolyzable precursor thereof;

Z is an electron withdrawing group having the formula $—CON(R)_2$, $—SO_2N(R)_2$, —COOR, —CN, SO_2R' or —COR', wherein R' is an alkyl group of 1 to 8 carbon atoms or an aryl group of 6 to 10 carbon atoms, and each R is H or R';

Z' is an alkyl group of 1 to 8 carbon atoms, an aryl group of 6 to 10 carbon atoms, or $N(R)_2$;

CAR represents a ballasted carrier moiety which is capable of releasing said diffusible azo dye as a function of development of said silver halide emulsion layer under alkaline conditions; and

t is an integer of 0 or 1, with the proviso that the compound contains at least one but not more than two CAR groups;

said process comprising:

(1) treating said element with an alkaline processing composition in the presence of a silver halide developing agent to effect development of each of the exposed silver halide emulsion layers;

(2) said dye-releasing compound then releasing said diffusible azo dye imagewise as a function of said development of each of said silver halide emulsion layers;

(3) at least a portion of said imagewise distribution of said azo dye diffusing to a dye image-receiving layer; and

(4) contacting said imagewise distribution of said azo dye in said dye image-receiving layer with metal ions, thereby forming a metal-complexed azo dye transfer image.

4,148,644

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIALS

Hideyasu Ohta, and Masayoshi Mayama, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1977, Ser. No. 848,358
Claims priority, application Japan, Nov. 5, 1976, 51-133044
Int. Cl.[2] G03C *5/14, 7/24, 1/78*
U.S. Cl. 96—39 **6 Claims**

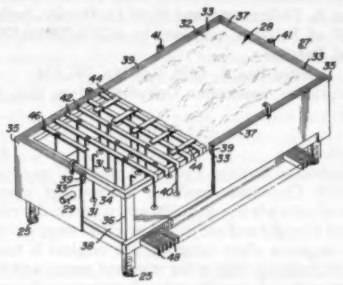
1. A light-sensitive silver halide photographic material comprising a cellulose ester film support and a light-sensitive silver halide emulsion layer coated on one side of the support and a non-light sensitive layer removable during an aqueous processing step after exposure coated on the other side of the support, said photographic material comprising a magnetic recording layer on a portion of said non-light sensitive layer, which magnetic recording layer has been formed by coating a coating dispersion containing particulate magnetic material, a binder, and at least 60% by weight, based on a total weight of a the coating dispersion, of 2-ethoxyethanol as a component of the dispersion medium and thereafter drying.

4,148,645

METHODS OF STEREO RELIEF MODELING

Jackson Gates, P. O. Box 145, Kylertown, Pa. 16847

Continuation-in-part of Ser. No. 557,612, Mar. 12, 1975, Pat. No. 4,005,932. This application Jan. 13, 1977, Ser. No. 759,159
Int. Cl.[2] G03C *11/00;* G03B *21/00;* B44C *3/00;* B29C *1/02*
U.S. Cl. 96—46 **18 Claims**



1. A method of producing an actual stereo relief model from a pair of diapositives showing the same subject matter from different angles comprising the steps of:

illuminating and projecting a first image from one of said diapositives downward onto a flexible stretchable platen comprising a plurality of points vertically adjustable by means of adjustable elements engaging said flexible stretchable platen points; illuminating and projecting a second image of the same subject matter as the first image from the second of said diapositives downwardly onto said flexible platen;

adjusting said plurality of points by manipulating said adjustable elements to cause said first and said second images to form one image at each of said plurality of points, thereby creating an actual stereo relief model of said subject matter as shown by said first and said second images.

4,148,646

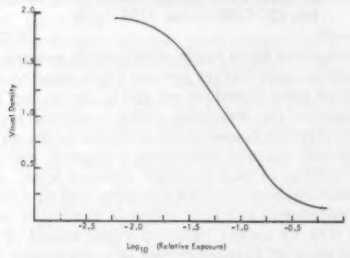
CONTINUOUS TONE DIAZOTYPE PROCESS

Gilbert Zweig, Barrington, R.I., assignor to Trans World Technology Laboratories, Inc., Fiskeville, R.I.

Filed Jun. 13, 1977, Ser. No. 806,100
Int. Cl.[2] G03C *5/18, 1/60*
U.S. Cl. 96—49 **9 Claims**

1. A process for producing duplicates of continuous tone

originals with a diazotype material which comprises exposing a diazo film to actinic radiation through the original, said diazo film comprising a transparent film support and a layer coated thereon consisting essentially of a binder lacquer containing at least two light-sensitive diazonium compounds having different photolysis rates, at least one coupler for the diazonium



compounds, a non-photolyzable ultraviolet radiation absorbing material, and homogeneously distributed in said layer as least about 7% by weight of a bulk, broad actinic radiation-absorbing inert particulate material, based upon the amount of lacquer, and developing the exposed film to provide an azo dye image of the original.

4,148,647

REVERSAL PROCESSING OF EXPOSED LIPPMAN-EMULSIONS

Francois L. Schelfaut, St. Niklaas; Willy J. Vanassche, Kontich; Herman A. Philippaerts, and René O. Duville, both of Edegem, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Dec. 3, 1976, Ser. No. 747,338

Claims priority, application United Kingdom, Dec. 12, 1975, 51087/75

Int. Cl.[2] **G03C** *5/50*

U.S. Cl. 96—59 **10 Claims**

1. A method of forming a reversal image of an original in a silver halide Lippmann-emulsion, the average silver halide grain size of which is less than 100 nm, wherein the emulsion is image-wise exposed and subjected to a first stage development so that a negative silver image of the original is formed but some silver halide is left in the exposed areas, and then to a second stage development under fogging conditions to develop said residual silver halide in the exposed areas, whereafter the silver developed in said first and second development stages is bleached and the active silver halide then still remaining in the emulsion is converted to form a positive image.

4,148,648

DIFFUSION TRANSFER ELEMENTS COMPRISING U V LIGHT ABSORBERS

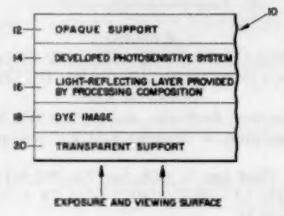
William Pfingston, Randolph, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

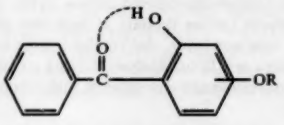
Filed Feb. 16, 1977, Ser. No. 768,954

Int. Cl.[2] **G03C** *1/40, 1/76, 1/48, 1/84*

U.S. Cl. 96—73 **29 Claims**

22. An integral negative-positive film unit comprising in order: a first support; a red-sensitive silver halide emulsion layer; a green-sensitive silver halide emulsion layer; and a blue-sensitive silver halide emulsion layer; said silver halide emulsions associated respectively with a cyan dye developer, a magenta dye developer and a yellow dye developer; an image-receiving layer for receiving image dyes transferred thereto by diffusion as a function of exposure and development of said silver halide emulsion layers; a second support which is transparent and through which said image-receiving layer may be viewed and a rupturable container releasably holding an aqueous alkaline processing composition comprising a reflecting pigment and a substantially colorless, substantially alkali insoluble 2-aryl-4,5 arylo-1,2,3-triazole U V absorber or a hydroxy benzophenone U V absorber of the structure:





where R represents a substituent which can provide a substantially colorless, substantially alkali insoluble U V absorber, said container being positioned so that distribution of said processing composition is effective to provide a light-reflecting layer between said image-receiving layer and said silver halide emulsion layers.

4,148,649

METHOD FOR PRODUCING LITHOGRAPHIC PRINTING PLATES

Eugene Golda, Monsey; Alan L. Wilkes, Brewster, and Simon L. Chu, Dobbs Ferry, all of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Filed Feb. 9, 1977, Ser. No. 767,017

Int. Cl.[2] **G03C** *1/52, 1/64, 1/66*

U.S. Cl. 96—75 **16 Claims**

1. A method of producing a lithographic printing plate which comprises applying an aqueous bonding coating solution wherein the solute of the aqueous coating solution is a substance selected from the group consisting of an alkali silicate, silicic acid, alkali zirconium fluoride, hydrofluozirconic acid, Group IV-B metal fluoride, polyacrylic acid, alkali metal salt and alkali metal acid, to at least one surface of an aluminum sheet substrate suitable as a base for lithographic printing plates, removing excess bonding solution, thereafter subjecting the coated aluminum sheet substrate to a hot air baking treatment at elevated temperatures in the range of from about 50 degrees C. to about 300 degrees C., then removing any excess coating solution which has not reacted with the aluminum sheet substrate, and applying a suitable light sensitive lithographic composition to the coated aluminum sheet substrate.

4,148,650

INSTANT PROCESSING FILM UNIT WITH INTERNAL DARK SLIDE AND LIGHT SEAL

Richard H. Martens, and Charles J. Simpson, both of Greece, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,588

Int. Cl.[2] **G03C** *1/48;* **G03D** *9/02*

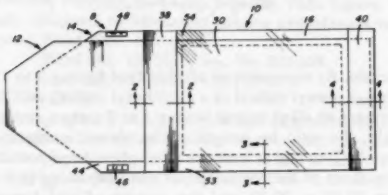
U.S. Cl. 96—76 C **7 Claims**

1. An instant-processing film unit having first and second sheets connected together along their lateral margins, and including means for containing a distributable processing liquid, one of said sheets comprising a photosensitive layer for recording a latent image processable by the liquid and an opaque layer, the other of said sheets comprising a transparent cover for said element, the opaque layer and the transparent

cover lying on opposite sides of said photosensitive layer; said film unit comprising:

a removable dark slide positioned between said sheets and covering said photosensitive element for protecting said element from fogging by light passing through said cover sheet;

means defining a passage extending from between said sheets to the exterior of said sheets, said dark slide extending through said passage to a position where said dark slide is



accessible for removal from its position covering said photosensitive element; and

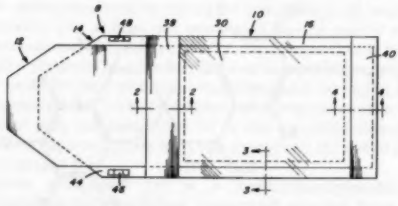
a light-seal at said passage for protecting said photosensitive element from light entering said passage, said seal including a strip of flexible, opaque sheet material, first means for coupling said sheet material to said dark slide, and second means for coupling said sheet material to said photosensitive element, at least one of said first and second coupling means being releasable by removal of said dark slide.

4,148,651

INSTANT PROCESSING FILM UNIT HAVING INTERNAL DARK SLIDE

Wayne A. Bubb, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,589
Int. Cl.[2] G03C *1/48;* G03D *9/02*
U.S. Cl. 96—76 C **9 Claims**



1. An instant-print film unit for recording a latent image processable by a liquid composition to establish a visibly perceivable image, said film unit comprising:

means for supplying the liquid composition;

a photosensitive element having first and second faces and including at least one light-sensitive layer therebetween for recording the latent image;

an opaque layer for shielding said light-sensitive layer from fogging through said second face;

a transparent cover sheet coupled over the first face of said photosensitive element along the lateral margins of said element, said cover sheet facilitating distribution of the processing composition between said element and sheet; and

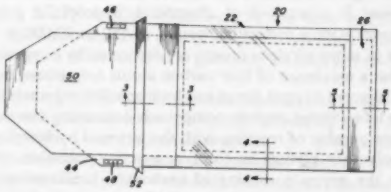
a dark slide removably positioned between said photosensitive element and said cover sheet, said dark slide shielding said light-sensitive layer from fogging through said first face.

4,148,652

INSTANT PROCESSING FILM UNIT

Robert A. Sylvester, Parma, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,617
Int. Cl.[2] G03C *1/48;* G03D *9/02*
U.S. Cl. 96—76 C **14 Claims**



1. In an instant-processing film unit of the preregistered type including a reservoir for liquid processing composition, a photosensitive element for recording a latent image processable by the composition to establish a visible image, and a transparent cover sheet coupled to the photosensitive element for facilitating the distribution of the processing composition from the reservoir onto the photosensitive element, said photosensitive element including an opaque layer and at least one light-sensitive layer between the opaque layer and the cover sheet; the improvement comprising:

means defining an opening in one end of the film unit for providing access between the photosensitive element and the cover sheet;

an opaque dark slide between the photosensitive element and the cover sheet shielding the photosensitive element from fogging by light passing through the cover sheet, said dark slide extending through said opening to a position accessible for removing the dark slide from between the element and sheet; and

light sealing means carried by said dark slide and defining a hood enclosing both the photosensitive element and the cover sheet at said one end for blocking light from entering through said opening to prevent fogging of said photosensitive element.

4,148,653

RESTRAINING LAYER FOR RETARDING THE DIFFUSION OF HYDROXYL IONS IN THE DYE DIFFUSION TRANSFER PROCESS

Wulf von Bonin; Erich Wolff; Werner Krafft, and Günther Matschke, all of Leverkusen, Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jan. 12, 1977, Ser. No. 758,579
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1976, 2601653
Int. Cl.[2] G03C *1/40, 5/54, 7/00;* B44D *1/09*
U.S. Cl. 96—77 **22 Claims**

1. A photographic material for the production of colored images by the dye diffusion process comprising:

(a) at least one transparent layer support

(b) an image receiving layer

(c) a light reflecting layer or means to produce such light-reflective layer

(d) a photosensitive element containing at least one color unit comprised of a photosensitive silver halide emulsion layer and a dye-providing compound associated to said photosensitive layer, said reflecting layer being located between said image receiving layer and the photosensitive element

(e) at least one restraining layer capable of retarding the diffusion of hydroxyl ions located between a first group and a second group of layers of said photographic material, said first group comprising at least one color unit of said photosensitive element (d), and

(f) a rupturable container containing an alkaline processing composition and capable of discharging, on applying to it a compressive force, its content between said restraining layer and said first group of layers or between two layers of said first group of layers,

wherein the improvement comprises the restraining layer consists essentially of a film-forming linear polymer of a molecular weight of from 5,000 to 100,000 and the linear chain of the polymer is comprised of alternating hydrophilic polyether segments with a molecular weight of 150 to 20,000 in which three or more alkylene groups are separated by oxygen atoms, so that a maximum of four carbon atoms are present between two adjacent oxygen atoms and hydrophobic segments formed from bifunctional organic compounds containing two reactive groups capable of reacting with the terminal hydroxyl groups of polyether glycols to form connecting members selected from the group consisting of carbonate, urethane and ester connecting members, by removal of said reactive groups, said alternating hydrophilic and hydrophobic segments being joined to one another through connecting members selected from said carbonate, urethane and ester connecting members.

4,148,654

POSITIVE ACTING PHOTORESIST COMPRISING DIAZIDE ESTER, NOVOLAK RESIN AND ROSIN

Michael J. Oddi, 135 Fenno St., Revere, Mass. 02151

Filed Jul. 22, 1976, Ser. No. 707,672
Int. Cl.[2] G03C 1/54
U.S. Cl. 96—91 D **24 Claims**

1. An alkali soluble, positive working photoresist composition comprising a naphthoquinone (1,2)-diazide sulfonic acid ester photosensitizer, a novolak resin in an amount of from 10 to 90% by weight, on a solids basis, of the photoresist composition, which novolak resin is rendered developable by the action of activating radiation on the photosensitizer, and a rosinous material in an amount of between about 1% and 85% by weight, on a solids basis, of the photosensitive resist composition, selected from the group of rosin, hydrogenated rosin, esterified rosin, neutralized rosin, esterified hydrogenated rosin, esterified neutralized rosin, and mixtures thereof.

18. A dry film photoresist product comprising a dried layer of the photoresist composition of claim 1.

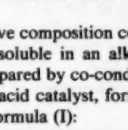
4,148,655

PHOTOSENSITIVE COMPOSITION OF AROMATIC AZIDO COMPOUND

Hirosi Itoh; Yukinori Hata, and Fumio Itoh, all of Tokyo, Japan, assignors to Oji Paper Co., Ltd., Japan

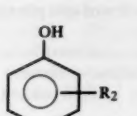
Filed Dec. 16, 1977, Ser. No. 861,348
Claims priority, application Japan, Apr. 20, 1977, 52-44588
Int. Cl.[2] G03C 1/52
U.S. Cl. 96—91 N **5 Claims**

1. A photosensitive composition comprising (A) at least one polymer which is soluble in an alkali aqueous solution and which has been prepared by co-condensation polymerizing, in the presence of an acid catalyst, formaldehyde with a phenol compound of the formula (I):



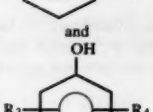
(I)

wherein, R_1 represents a hydrogen atom or a methyl radical, and, at least one other phenol compound selected from those of the formulae (II) and (III):



(II)

and



(III)

wherein, R_2 represents an alkyl radical having 3 to 15 carbon atoms, a phenyl radical or a cyclohexyl radical, and R_3 and R_4 represent an alkyl radical having 1 to 3 carbon atoms, respectively, the ratio by weight of the phenol compound of the formula (I) to said at least one other phenol compound selected from those of the formulae (II) and (III) being in a range of from 90:10 to 30:70, and the amount of said formaldehyde being in a range of from 50 to 90% by mole, based on the total amount of said phenol compound of the formula (I) and said at least one other phenol compounds selected from those of the formulae (II) and (III), and (B) at least one aromatic azido compound having a ($-N_3$) moiety in an amount of from 5 to 40% based on the weight of said polymer.

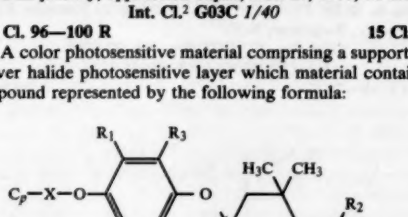
4,148,656

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Mitsuto Fujiwhara, Hachioji; Takashi Sasaki, Hino; Takashi Uchida, Hachioji, and Morio Kobayashi, Sagamihara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1977, Ser. No. 860,738
Claims priority, application Japan, Dec. 17, 1976, 51-152752
Int. Cl.[2] G03C 1/40
U.S. Cl. 96—100 R **15 Claims**

1. A color photosensitive material comprising a support and a silver halide photosensitive layer which material contains a compound represented by the following formula:



wherein C_p represents a coupler residue bonded to the non-coupling position or is a magenta coupler bonded to the coupling position, R_1, R_2 and R_3 individually represent hydrogen, halogen, an alkyl group, an alkenyl group, an aryl group, an alkoxy group, an alkenyloxy group, an aryloxy group, an alkylthio group, an alkenylthio group, an arylthio group, an acyl group, an acylamino group, a diacylamino group, an acyloxy group, a sulfonamido group, alkylamino group, a cycloalkyl group, or an alkoxycarbonyl group, R represents hydrogen, an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group, a heterocyclic ring selected from the group consisting of pyridinyl, pyradinyl, pyridadinyl, quinonyl, thienyl, piperidyl, pyrolyl, pyrrolinyl, tetrazolyl, thiadinyl, imidazolyl, morpholino, furyl, thiazolyl, oxazolyl, benzthiazolyl, benzoxazolyl, benzimidazolyl and furanyl, an acyl group, a carbamoyl group, thiocarbamoyl group, a sulfamoyl group, or C_p—X—, and X represents a simple bond, or a divalent group selected from the group consisting of an alkylene

group, a cycloalkylene group, an arylene group, a divalent group with at least one arylene and at least one alkylene group have been connected, —CO—, —CS—, —SO_2—, —CONH— or —SO_2NH—.

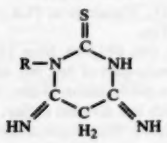
4,148,657

SILVER HALIDE PHOTOGRAPHIC EMULSIONS REACTIVELY ASSOCIATED WITH ANTIFOG AGENTS, AND PHOTOGRAPHIC ELEMENTS CONTAINING SAID EMULSIONS

Paolo Beretta, Ferrania, and Luigi Danello, Vado Ligure, both of Italy, assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 19, 1977, Ser. No. 843,688
Int. Cl.² G03C *1/40, 1/34*
U.S. Cl. 96—100 R **6 Claims**

1. A photographic element comprising a supporting base and a photographic silver halide emulsion layer on said base, and in said emulsion layer or in a layer adjacent to said emulsion layer an anti-fogging amount of a compound of the following formula:



wherein R represents a phenyl group.

4,148,658

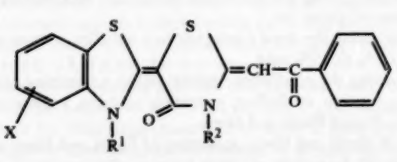
PHOTOPOLYMERIZABLE COMPOSITION COMPRISING MULTI-PHOTOINITIATOR SYSTEM

Syunichi Kondoh; Akihiro Matsufuji; Akira Umehara, all of Asaka; Akira Sato, and Akira Ogawa, both Minami-ashigaru, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Nov. 29, 1977, Ser. No. 855,638
Claims priority, application Japan, Dec. 2, 1976, 51/145341
Int. Cl.² G03C *1/68, 5/00*
U.S. Cl. 96—115 P **22 Claims**

1. A photopolymeric composition comprising, as essential components, (A) at least one compound having one or more addition polymerizable ethylenically unsaturated double bonds and (B) a photopolymerization initiator composition comprising (i) a combination of at least one compound (a) and at least one compound (b), (ii) a combination of at least one compound (a) and at least one compound (c) or (iii) a combination of at least one compound (a), at least one compound (b) and at least one compound (c);

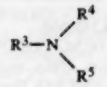
wherein compound (a) is a benzoylmethylenebenzothiazolylidenethiazolidone compound selected from the group consisting of 2-benzoylmethylene-5-benzothiazolylidene-thiazolidin-4-one and the substituted derivatives thereof represented by the following general formula (I):



(I)

wherein R^1 and R^2, which may be the same or different, each represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group or an aralkyl group and X represents a substituent exhibiting a Hammett's sigma (σ) constant ranging from about −0.9 to about +0.5;

compound (b) is a tertiary or polyamine compound selected from the group consisting of tertiary amines represented by the following general formula (II):



(II)

wherein R^3, R^4 and R^5, which may be the same or different, each represents an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group or an aralkyl group; and polyamines; and

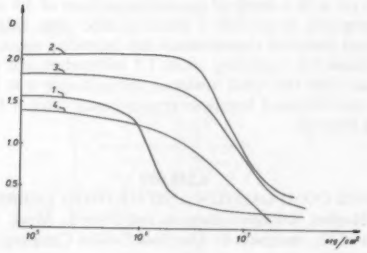
compound (c) is a disubstituted aminoarylcarbonyl compound selected from the group consisting of p-(disubstituted amino)benzophenones, p-(disubstituted amino)acetophenones, p-(disubstituted amino)propiophenones, bis [p-(disubstituted amino)phenyl]ketones, p-(disubstituted amino)phenyl styryl ketones, 4-(disubstituted amino)benzoins, p-(disubstituted amino) benzaldehydes, p-(disubstituted amino)benzoic esters, 4-(disubstituted amino)-1-naphthaldehydes, p-(disubstituted amino)styryl phenyl ketones and p-(disubstituted amino)styryl styryl ketones, wherein the substituents, which may be the same or different, of the above-described disubstituted amino groups are an alkyl group, an aryl group, an alkylaryl group or an aralkyl group and wherein, in addition to the disubstituted amino group, the carbon atoms of the aryl ring having the disubstituted amino group thereon or the carbon atoms of another aryl ring where another aryl ring is present of the disubstituted aminoarylcarbonyl compounds may be substituted with one or more substituents exhibiting a Hammett's sigma (σ) constant ranging from about −0.9 to about +0.7.

4,148,659

PHOTOGRAPHIC MATERIAL CONTAINING AN ORGANO-TELLURIUM COMPOUND, A 1,4-DIHYDROPYRIDINE PHOTO-OXIDIZING AGENT AND THE USE THEREOF IN HEAT DEVELOPMENT

Julius L. Vuyts; Frans C. Heugebaert, both of Kontich, and Wilhelmus Janssens, Aarschot, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Feb. 28, 1978, Ser. No. 882,044
Claims priority, application United Kingdom, Mar. 2, 1977, 8760/77
Int. Cl.² G03C *5/24, 1/00*
U.S. Cl. 96—48 HD **14 Claims**



1. A photosensitive recording material containing in admixture in a binder medium:

(1) an imaging substance which is a tellurium tetrahalide or an organo-tellurium compound having a halogen atom directly linked to a tellurium atom and at least one organic substituent comprising a carbonyl group,

(2) a photo-oxidizing agent which is a photosensitive 4-(2'-nitrophenyl)-1,4-dihydropyridine, and

(3) a heat-activatable organic reducing agent or reducing agent precursor that is adapted to reduce said tellurium

compound by heating but leaves that compound substantially unaffected at and below 60° C.

4,148,660

PLASTER MOLDING COMPOSITION

David R. Lankard, Columbus, Ohio, and Walter A. Hedden, Sanibel, Fla., assignors to PMCMA Research Group, Dayton, Ohio

Continuation-in-part of Ser. No. 660,444, Feb. 23, 1976, Pat. No. 4,081,283. This application Dec. 19, 1977, Ser. No. 862,143

Int. Cl.[2] B28B *7/34*

U.S. Cl. 106—38.3 6 Claims

1. In a metal castings molding composition having as its principal component gypsum plaster present in the range of 50–70% by weight of said composition, the improvement comprising the addition of 5–25% by weight fine expanded perlite at least 50% of which will pass through a −50 mesh screen, and the remainder consisting essentially of at least 5% by weight non-fibrous filler selected from the group consisting of mica, silica, fly ash, pyrophyllite, and mixtures thereof, whereby there is produced a fiber-free metal castings molding composition having good dry blend properties, slurry characteristics, and wet and dry mold features.

4,148,661

PHOTOCHROMIC SHEET GLASS COMPOSITIONS AND METHOD

David J. Kerko, and Thomas P. Seward, III, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 567,925, Apr. 14, 1975, Pat. No. 4,018,965. This application Nov. 4, 1976, Ser. No. 738,850

Int. Cl.[2] C03C *3/08, 3/10, 3/26*

U.S. Cl. 106—54 3 Claims

1. A glass composition suitable for the production of chemically strengthenable photochromic drawn sheet glass articles consisting essentially, in weight percent as calculated from the batch, of about 54–66% SiO_2, 7–15% Al_2O_3, 10–25% B_2O_3, 0.5–4.0% Li_2O, 3.5–15% Na_2O, 0–10% K_2O, 6–16% total of $Li_2O+Na_2O+K_2O$, 0–3.0% PbO, 0.1–1.0% Ag, 0.1–1.0% Cl, 0–3.0% Br, 0–2.5% F, 0.008–0.2% CuO, 0–1.0% total of transition metal oxide colorants, and 0–5.0% total of rare earth metal oxide colorants, said glass composition providing a haze free glass having a viscosity at the liquidus of at least 10^4 poises, long term stability against devitrification in contact with platinum at temperatures corresponding to glass viscosities in the range of 10^4–10^6 poises, and excellent chemical durability, said glass being chemically strengthenable by sodium-for-lithium ion exchange to an unabraded modulus of rupture strength of 45,000 psi with a depth of ion-exchange layer of 3.5 mils, and heat treatable to provide a photochromic glass exhibiting a darkened luminous transmittance not exceeding about 25% in a thickness not exceeding about 1.7 millimeters and a fading rate such that the faded luminous transmittance is at least 1.5 times the darkened luminous transmittance after a 5 minute fading interval.

4,148,662

BRICK COMPOSITION AND METHOD THEREFOR

John Hughes, Arlington Heights, and Peter L. Maul, Addison, both of Ill., assignors to American Colloid Company, Skokie, Ill.

Filed Nov. 1, 1977, Ser. No. 847,600

Int. Cl.[2] C04B *33/00*

U.S. Cl. 106—67 16 Claims

1. A method for producing brick which comprises intimately admixing (A) a brick raw material consisting essentially of from 50% to 100%, by weight, of shale and from 50% to 0%, by weight, of clay and (B) a sodium bentonite additive composition consisting essentially of from 99.9% to 90%, by weight of sodium bentonite and from 0.1% to 5%, by weight, of a water soluble anionic polyelectrolyte polymer; and forming a brick from the resultant admixture.

4,148,663

REFRACTORY CONCRETES

Cressie E. Holcombe, Jr., Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 21, 1977, Ser. No. 808,486

Int. Cl.[2] C04B *9/00*

U.S. Cl. 106—105 13 Claims

1. A concrete composition having less than 40% porosity, said composition comprising particles of aggregate material embedded in a cement matrix, said cement matrix produced by:

a. contacting an oxide selected from the group of Y_2O_3, La_2O_3, Nd_2O_3, Sm_2O_3, Eu_2O_3 and Gd_2O_3 with an aqueous solution of a salt selected from the group of NH_4Cl, YCl_3 and $Mg(NO_3)_2$ to form a fluid mixture; and

b. allowing the fluid mixture to harden.

4,148,664

PREPARATION OF FIBROUS COLLAGEN PRODUCT HAVING HEMOSTATIC AND WOUND SEALING PROPERTIES

Mamerto M. Cruz, Jr., Pennington, N.J., assignor to Avicon, Inc., Fort Worth, Tex.

Continuation of Ser. No. 684,940, May 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 466,214, May 2, 1974, abandoned, which is a continuation of Ser. No. 358,145, May 7, 1973, abandoned, which is a division of Ser. No. 76,638, Sep. 29, 1970, Pat. No. 3,742,955. This application Apr. 18, 1978, Ser. No. 897,502

Int. Cl.[2] C08L *89/00;* C09H *1/00*

U.S. Cl. 106—161 4 Claims

1. The method of preparing a mass of finely-divided fibrils and fibers having hemostatic properties and when placed on a wound combines with blood to form a mass that is self-adherent to the wound surfaces and seals the wound which comprises the steps of

(a) placing water-wet collagen in an ethanol-water mixture, the amount of ethanol being sufficient to constitute from 90% to 50% by weight of the mixture including the water in the water-wet collagen,

(b) agitating the mixture for a period sufficient to equalize the ethanol content of the collagen to that of the liquid,

(c) separating the excess liquid fo the collagen,

(d) placing the recovered collagen in an ethanol-ionizable acid mixture, the amount of acid being sufficient to form a partial salt of collagen containing from about 50% to 90% of the theoretical stoichiometric bound acid content,

(e) agitating the mixture for from about 3 to about 20 hours to equalize the ethanol content of the collagen to that of the liquid and to effect the reaction of the collagen with the acid to form a partial salt of collagen,

(f) separating the excess liquid from the partial salt,

(g) subjecting the recovered partial salt to treatment with ethanol and separating the partial salt from the liquid a sufficient number of cycles until the water content of the partial salt has been reduced to 1%,

(h) vacuum drying the recovered partial salt to a volatiles content of about 1%,

(i) conditioning the dried partial salt to a volatiles content of about 8% to 15%, and

(j) subjecting the conditioned partial salt to a fiberizing and deaggregation or fluffing operation to form a mass of finely-divded fibrils and fibers,

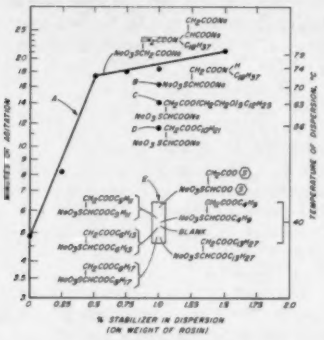
the mass of fibrils and fibers consisting of fibrils and fibers at least about 5% by weight of which have an effective length of not more than 1 mm. and not more than about 10% by weight of which have an effective length above 12 mm., the mass of fibrils and fibers having a surface area of at least 1 square meter per gram, having a bulk density of not more tha 8 pounds per cubic foot and exhibiting a HAT test of not more than 1500 when wet with blood.

4,148,665

ROSIN DISPERSIONS OF IMPROVED STABILITY

Russell J. Kulick, Old Greenwich, and Sewell T. Moore, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 589,109, Jun. 23, 1975, abandoned. This application Sep. 22, 1977, Ser. No. 835,619
Int. Cl.[2] C08L *93/04*
U.S. Cl. 106—236 5 Claims



1. A rosin dispersion consisting essentially of colloidal particles of a paper-sizing rosin as dispersed phase in an acidic aqueous medium as continuous phase, said medium having a small but effective dissolved content of a water-dispersible hydrophobic-hydrophilic emulsifying agent selected from the group consisting of tetrasodium N-(1,2-dicarboxyethyl)-N-octadecylsulfosuccinamate, disodium N-octadecylsulfosuccinamate, disodium dodecylpenta(ethoxy)ethyl sulfosuccinate, and disodium decylsulfosuccinate as agent improving the mechanical stability of said dispersion, the hydrophilic-hydrophobic balance being such that said agent is at least colloidally soluble in water, and the amount of said aqueous medium being such that the dispersion is of pumpable viscosity.

4,148,666

CRYSTALLINE NICKEL CHELATE OF 1-NITROSO-2-NAPHTHOL AND PROCESS FOR PRODUCING SAME

Richard K. Putney, Hudson Falls, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 22, 1977, Ser. No. 853,929
Int. Cl.[2] C04B *31/00*
U.S. Cl. 106—288 Q 10 Claims

1. A process for producing a pigmentary composition containing an anhydrous, crystalline, light-stable nickel chelate of 1-nitroso-2-naphthol characterized by having an X-ray diffraction pattern which exhibits strongest d-spacings at about 11.6, 9.6, 6.0, 4.9, 4.5 and 3.6 Angstroms, which process comprises intimately contacting particles of a hydrated nickel chelate of 1-nitroso-2-naphthol in aqueous medium at a pH of about 3.5 to about 5.0 with from about 0.15 to about 2 parts per part by weight of anhydrous nickel chelate, of at least one fatty acid containing at least 12 carbon atoms or a water-insoluble, normally solid salt thereof at a temperature at which the fatty acid or its salt is a liquid, isolating the resulting product from the aqueous medium, and then heating the isolated product at a temperature ranging from about 75° C. to about 115° C. until the product is dehydrated and converted to the anhydrous, crystalline, light-stable form of the nickel chelate.

4,148,667

CRYSTALLINE NICKEL CHELATE OF 1-NITROSO-2-NAPHTHOL AND PROCESS FOR PRODUCING SAME

Bernard G. Ziobrowski, Glens Falls, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 22, 1977, Ser. No. 853,930
Int. Cl.[2] C04B *31/00*
U.S. Cl. 106—288 Q 10 Claims

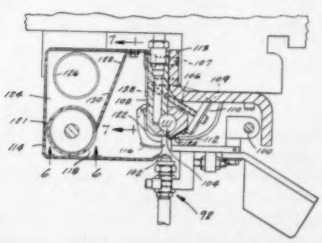
1. In a process for producing a pigmentary composition comprising a crystalline, light-stable nickel chelate of 1-nitroso-2-naphthol characterized by having an X-ray diffraction pattern which exhibits strongest d-spacings at about 11.6, 9.6, 6.0, 4.9, 4.5 and 3.6 Angstroms by treating particles of a hydrated nickel chelate of 1-nitroso-2-naphthol in aqueous medium with from about 0.10 to about 1.0 mole per mole of chelate of an inert, water-immiscible, poly(vinyl chloride) ester plasticizer which is a non-solvent for the nickel chelate and has a boiling point above about 200° C. until the particles are wetted, isolating the wetted product from the aqueous medium, and then heating the isolated product at a temperature ranging from about 65° C. to about 105° C. until the product is dehydrated and converted to the anhydrous, crystalline, light-stable form, the improvement which comprises carrying out the treatment step in aqueous medium which additionally contains from about 0.05 to about 1 part per part of anhydrous nickel chelate of at least one fatty acid containing at least 12 carbon atoms or a water-insoluble, normally solid salt thereof at a pH between about 3.5 and 5.0 and at a temperature at which the fatty acid and/or its salt and the plasticizer are liquid.

4,148,668

METHOD FOR CLEANING A DYE-EMITTING ORIFICE

William H. Stewart, Jr., Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 430,528, Jan. 3, 1974, abandoned. This application Oct. 28, 1975, Ser. No. 626,489
Int. Cl.[2] B08B *3/02*
U.S. Cl. 134—22 C 3 Claims



1. A method for cleaning a dye-emitting orifice of a dye jet gun bar comprising the steps of

(1) continuously directing a stream of dye from said orifice under pressure, and

(2) directing a stream of liquid into said orifice under sufficient pressure to counteract the dye liquor jet action to dislodge and remove contaminants and foreign material from said orifice.

4,148,669

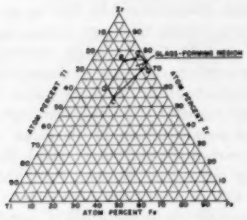
ZIRCONIUM-TITANIUM ALLOYS CONTAINING TRANSITION METAL ELEMENTS

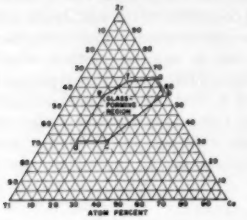
Lee E. Tanner, Summit, and Ranjan Ray, Morristown, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

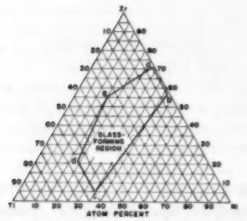
Division of Ser. No. 823,056, Aug. 9, 1977, Pat. No. 4,126,449. This application Apr. 3, 1978, Ser. No. 892,618

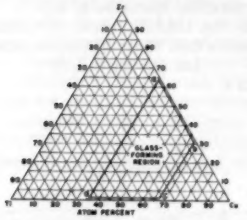
Int. Cl.[2] C21D *1/00*; C22F *1/00*

U.S. Cl. 148—3 **3 Claims**









1. A process for preparing a zirconium-base alloy comprising the steps of:

a. cooling a melt of alloy consisting essentially of a composition selected from the group consisting of

(i) zirconium, titanium and iron which, when plotted on a ternary composition diagram in atom percent Zr, atom percent Ti and atom percent Fe, is represented by a polygon having at its corners the points defined by

(1) 77 Zr - 1 Ti - 22 Fe
(2) 72 Zr - 1 Ti - 27 Fe
(3) 55 Zr - 25 Ti - 20 Fe
(4) 60 Zr - 25 Ti - 15 Fe
(5) 74 Zr - 11 Ti - 15 Fe;

(ii) zirconium, titanium and cobalt which, when plotted on a ternary composition diagram in atom percent Zr, atom percent Ti and atom percent Co, is represented by a polygon having at its corners the points defined by

(1) 64 Zr - 1 Ti - 35 Co
(2) 56 Zr - 1 Ti - 43 Co
(3) 31 Zr - 40 Ti - 29 Co
(4) 31 Zr - 54 Ti - 15 Co
(5) 55 Zr - 30 Ti - 15 Co
(6) 63 Zr - 14 Ti - 23 Co;

(iii) zirconium, titanium and nickel which, when plotted on a ternary composition diagram in atom percent Zr, atom percent Ti and atom percent Ni, is represented by a polygon having at its corners the points defined by

(1) 71 Zr - 1 Ti - 28 Ni
(2) 57 Zr - 1 Ti - 42 Ni
(3) 5 Zr - 60 Ti - 35 Ni
(4) 21 Zr - 60 Ti - 19 Ni
(5) 55 Zr - 30 Ti - 15 Ni; and

(iv) zirconium, titanium and copper which, when plotted on a ternary composition diagram in atom percent Zr, atom percent Ti and atom percent Cu, is represented by a polygon having at its corners the points defined by

(1) 64 Zr - 1 Ti - 35 Cu
(2) 31 Zr - 1 Ti - 68 Cu
(3) 1 Zr - 32 Ti - 67 Cu
(4) 1 Zr - 64 Ti - 35 Cu, said cooling step being conducted at a cooling rate of at least about 105° C./sec to thereby produce a substantially glassy phase of said alloy; and

b. heating said substantially glassy alloy at a temperature at or above its crystallization temperature to cause said alloy to form a polycrystalline phase.

4,148,670

COATING SOLUTION FOR METAL SURFACE

Timm L. Kelly, Oreland, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 674,015, Apr. 5, 1976, abandoned. This application Dec. 30, 1976, Ser. No. 755,922

Int. Cl.[2] C23F *7/14*

U.S. Cl. 148—6.15 R **44 Claims**

1. An acidic aqueous coating solution effective in forming a non-chromate coating on aluminum and having a pH within the range of about 1.5 to about 4.0 and consisting essentially of at least about 10 ppm of zirconium or titanium or a mixture thereof, at least about 10 ppm of phosphate and available fluoride, the amounts and proportions thereof being such that said solution is capable, in the presence of dissolved aluminum, of forming on an aluminum surface a uniformly clear and colorless coating and providing a coated surface which resists blackening after the coated surface is subjected to boiling water for a 2 minute period, and wherein said solution includes dissolved aluminum and is substantially free of solids which tend to precipitate.

4,148,671

HIGH DUCTILITY, HIGH STRENGTH ALUMINUM CONDUCTOR

James G. Morris, Lexington, Ky., and Franklin D. Lemkey, Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 768,798, Feb. 15, 1977, abandoned. This application Dec. 7, 1977, Ser. No. 858,315

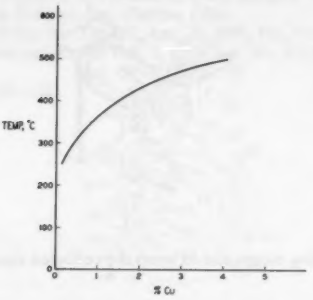
Int. Cl.[2] C22F *1/04*

U.S. Cl. 148—11.5 A **16 Claims**

1. A high strength high conductivity aluminum conductor of elongated geometry comprising:

an aluminum matrix containing from about 0.5 to about 1.5% Cu surrounding a plurality of Al_9Co_2 intermetallic fibers oriented parallel to the axis of elongation of the conduc-

tor, with the fibers having a diameter of from about 0.1 to about 2 microns, said fibers comprising from about 1 to



about 4% by volume of the conductor, said conductor being characterized by ductilities in excess of about 5%.

4,148,672

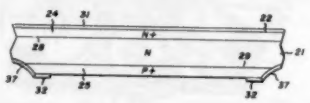
GLASS PASSIVATED GOLD DIFFUSED RECTIFIER PELLET AND METHOD FOR MAKING

Richard W. Kennedy, Skaneateles, and Edward G. Tefft, Auburn, both of N.Y., assignors to General Electric Company, Auburn, N.Y.

Division of Ser. No. 654,282, Feb. 2, 1976, Pat. No. 4,061,510, which is a continuation-in-part of Ser. No. 405,489, Oct. 11, 1973, Pat. No. 3,941,625. This application Sep. 12, 1977, Ser. No. 832,526

Int. Cl.[2] H01L *21/225, 29/16*

U.S. Cl. 148—33.5 **6 Claims**



1. A rectifier pellet comprising:

a body of semiconductor material defining two major surfaces and comprising a layer of P-type semiconductor material that defines a P/N junction that is generally parallel to said major surfaces;

a passivation layer on the periphery of said body of semiconductor material said passivation layer surrounding a conduction area of said body and intersecting said P/N junction;

an auxiliary impurity for stimulating carrier recombination, said auxiliary impurity being selectively disposed in said body of semiconductor material essentially only in said conduction area.

4,148,673

PLATE QUENCHING METHOD

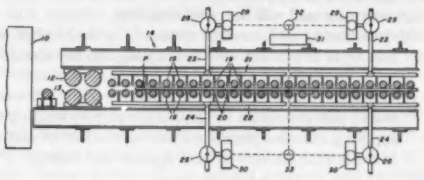
John P. Lacy, Baytown, Tex., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 230,417, Feb. 29, 1972, abandoned. This application Feb. 27, 1974, Ser. No. 446,448

Int. Cl.[2] C21D *9/00*

U.S. Cl. 148—153 **3 Claims**

1. In an operation in which a steel plate comes from a furnace heated throughout to an austenitizing temperature and passes into a quenching apparatus, an improved method of quenching said plate to produce commercial flatness in the plate as well as a martensitic structure throughout, said method comprising stopping the plate within said apparatus, flooding the top and bottom surfaces of the plate with large volumes of water applied almost instantaneously, but delaying the application of water to one of the surfaces of the plate slightly with respect to the other to prevent the plate from crowning or



dishing, and moving the plate back and forth within said apparatus while the water is applied thereto.

4,148,674

TERNARY EXPLOSIVE COMPOSITIONS

Jean-Paul A. Kehren, Angouleme, and Robert A. Ousset, Sorgues, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Jan. 30, 1978, Ser. No. 873,130

Claims priority, application France, Feb. 7, 1977, 77 03392

Int. Cl.[2] C06B *45/00*

U.S. Cl. 149—2 **5 Claims**

1. An explosive composition which comprises trinitrotoluene, cyclotrimethylene trinitramine and dinitroglycoluril.

4,148,675

INSULATION SYSTEM FOR ROCKET MOTORS

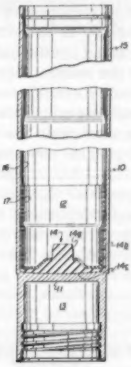
Jacques Ratté; Gonzague Duchesne, both of Ste-Foy, and Pierre Carignan, Charlesbourg, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defense, Ottawa, Canada

Continuation-in-part of Ser. No. 660,790, Feb. 24, 1976, abandoned. This application Apr. 20, 1978, Ser. No. 898,189

Claims priority, application Canada, Nov. 6, 1975, 239113

Int. Cl.[2] B29C *24/00*; F42B *15/00*

U.S. Cl. 156—91 **5 Claims**



1. A method of bonding a composite sheet insulant system to a rocket propellant chamber casing in a single operation, said insulant system comprising:

(1) a first layer of a sheet material comprising a carboxyl-terminated polybutadiene binder and a mixture of asbestos fibers and floats dispersed therein; and

(2) a second layer of aluminum foil:

said method comprising:

(a) attaching, but not bonding, said layer of sheet material to said aluminum foil layer along only one longitudinal edge thereof,

(b) forming said insulant system into a roll and allowing said layer of sheet material and said aluminum foil layer

to move relative to each other from the edge of their attachment thereby at least substantially eliminating air inclusions therebetween,

(c) inserting said roll into said chamber,

(d) positioning said insulant system in said chamber, said first layer in contact with said casing and the aluminum foil layer defining a facing for said chamber, and

(e) simultaneously bonding said first layer to said casing and to said aluminum foil in a single step by heating and applying outward pressure from the interior of said roll to force said insulant system against said casing.

4,148,676

NON-WOVEN ARTICLES MADE FROM CONTINUOUS FILAMENTS COATED IN HIGH DENSITY FOG WITH HIGH TURBULENCE

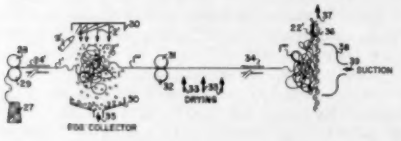
Elmer G. Paquette, Madison, and Karl R. Guenther, Stoughton, both of Wis., assignors to Bjorksten Research Laboratories, Inc., Madison, Wis.

Continuation of Ser. No. 617,059, Sep. 26, 1975, abandoned, which is a continuation of Ser. No. 419,626, Nov. 27, 1973, abandoned, which is a continuation of Ser. No. 189,150, Oct. 14, 1971, Pat. No. 3,775,210, which is a continuation-in-part of Ser. No. 876,005, Nov. 12, 1969, Pat. No. 3,616,002. This application Oct. 25, 1977, Ser. No. 845,419

The portion of the term of this patent subsequent to Nov. 27, 1990, has been disclaimed.

Int. Cl.[2] D04H *3/12*

U.S. Cl. 156—181 **1 Claim**



1. The process for producing a non-woven structure which comprises spraying into a gaseous ambient a solvent containing resinous binder medium so as to form a fog of substantially suspended droplets, passing continuous filaments through said ambient, imparting to the ambient lateral velocities relative to said filaments, to provide Reynolds numbers in excess of 8400 in said ambient, maintaining said filaments within said fog for at least 0.0001 sec. so as to cause the droplets of fog to settle upon said filaments, drying the material coated on the filaments to a viscosity greater than 1000 centipoise to thereby cause the material to stiffen to preclude the further movement of binder relative to the filaments, depositing the filaments in random configurations on a receiving means and evaporating residual liquid from the material on the filaments so as to cause the filaments to adhere to each other at points of contact.

4,148,677

METHOD OF AND APPARATUS FOR TAPING AN ARTICLE

William G. Bellamy, Winston-Salem; John G. Tucker, Lexington, and Hugh A. Wells, Winston-Salem, all of N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 20, 1977, Ser. No. 844,083

Int. Cl.[2] B65H *81/00*

U.S. Cl. 156—187 **18 Claims**

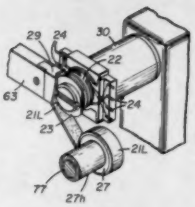
1. A method of wrapping tape on an article, comprising the steps of:

rotating a tape collecting means in a first direction to collect tape on the tape collecting means from a tape supply;

severing the tape from the tape supply to form a trailing end portion on the collected tape;

attaching the trailing end portion of the collected tape to the article; and

rotating the article to rotate the tape collecting means in a reverse direction, to pull the collected tape from the tape



collecting means and to wrap the collected tape onto the article.

4,148,678

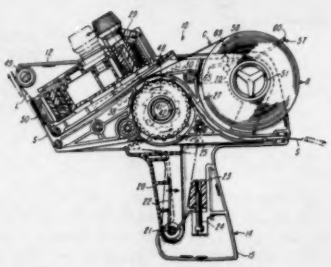
HAND-HELD LABELER

Ronald L. Fogle, Lebanon, and Larry D. Strausburg, Miamisburg, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Sep. 12, 1977, Ser. No. 832,695

Int. Cl.[2] B32B *31/00*

U.S. Cl. 156—384 **20 Claims**

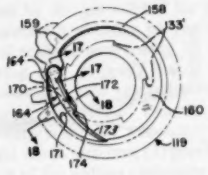


1. Hand-held apparatus for applying pressure sensitive labels releasably secured to a web of supporting material, the web being wrapped into a roll, the apparatus comprising: a housing having a handle, the housing having an access opening into which a label roll of said labels can be inserted, means for mounting the label roll in the housing in a position in which a substantial part of a full label roll is outside the housing, a delaminator mounted by the housing, an applicator disposed adjacent the delaminator, a driver for advancing the web, means defining a feed path for the web from the label roll, to the delaminator where labels are successively peeled from the web, to the driver, and to a place of exit from the housing, means for moving the driver to advance the web including a manually engageable actuator disposed at the handle, a generally U-shaped retainer for straddling the part of the label roll outside the housing to prevent unraveling, the retainer having a pair of arms that extend along opposite sides of the label roll and a bight connecting the arms, means for movably mounting the retainer on the housing for movement between a first position out of straddling relationship to the roll to enable a full label roll to be inserted into the access opening and a second position in which the retainer straddles the label roll, and means for releasably holding the retainer in the second position.

4,148,679
HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 790,519, Apr. 25, 1977, Pat. No. 4,116,747.
This application Feb. 7, 1978, Ser. No. 875,835
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—384 5 Claims

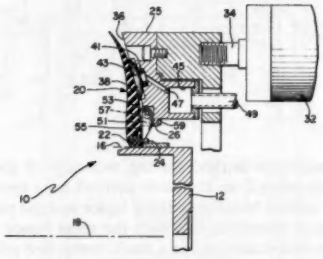


1. Hand-held apparatus for printing and applying labels, and including a frame having a handle, a manually engageable actuator disposed at the handle, means for mounting a label roll comprised of labels releasably adhered by pressure sensitive adhesive to a web of supporting material, a platen mounted by the frame, a print head cooperable with the platen, means disposed adjacent the platen for delaminating printed labels, means disposed adjacent the delaminating means for applying printed labels, means for advancing the web, and means responsive to movement of the actuator for moving the print head into and out of cooperation with the platen and for moving the web advancing means, the moving means including a gear, ratchet teeth movable in an annular path and coupled to the web advancing means, and a pawl driven by the gear and having a tooth cooperable with the ratchet teeth, the improvement comprising pivot means for pivotally mounting the pawl to the gear, and a leaf spring bearing against the gear for biasing the pawl tooth into the path.

4,148,680
TIRE BUILDING MACHINE

Norman B. Harding, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 9, 1978, Ser. No. 884,945
Int. Cl.[2] B29H *17/12*
U.S. Cl. 156—403 1 Claim

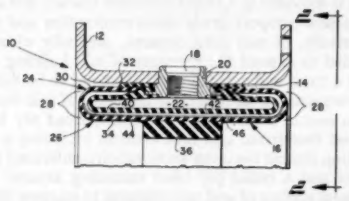


1. A tire building machine comprising a building drum having a first means defining an annular bead-seating groove including an endless elastic member disposed circumferentially of the drum, a plurality of segments spaced circumferentially about said drum and underlying said member, the segments being movable radially of the drum to expand said member to seat a tire bead on a tire carcass band disposed on the drum; second means for positioning a tire bead relative to said groove, said bead including an apex and an inextensible bead core, said second means comprising a first annular member disposed coaxially of said drum and fixed axially apart therefrom, said member having an outer cylindrical surface for engaging the radially innner surface of said bead to locate said core concentrically of the axis of said drum, a second annular member mounted for movement coaxially of the drum and of the first member and having a radially inner surface spaced radially outward of the outer surface of said first member so as to be movable coaxially over the latter, and an axially facing surface oriented toward said drum and engageable with said apex outwardly of said core, a plurality of suction cups disposed in equally spaced circular array concentrically of the second member and radially outward of the core, each cup being accommodated in a corresponding recess formed in said axially facing surface of the second member and protruding therefrom sufficiently to seal and to apply suction to a plurality of local areas of said apex radially outward of said core, means communicating with said suction cups to effect suction therein, a plurality of fingers pivotally mounted in coaxially equally angular spaced circular array on said second member, extending radially inwardly therefrom at a plane normal to said axis to about the mean diameter of said bead core, and swingable in axial planes out of the plane normal to said axis and toward said drum, and means for moving said second annular member between a first position surrounding said first annular member and a second position surrounding said beadseating groove.

4,148,681
EXPANDABLE CARRIER APPARATUS FOR A TIRE BUILDING MACHINE

Marcus H. Collins, Akron, and Kiritkumar R. Patel, Broadview Heights, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 5, 1977, Ser. No. 813,152
Int. Cl.[2] B29H *17/20*
U.S. Cl. 156—405 R 15 Claims



1. An expandable carrier apparatus for transferring a tread and a radial tread ply band from a building station to a further work station comprising an annular support member having an annular inner peripheral surface, and a fluid expandable annular tube element having an upper wall portion and a lower wall portion, said lower wall portion being movable radially away from said upper wall portion upon expansion of said tube element and being movable radially toward said upper wall portion upon contraction of said tube element, said upper wall portion including an annular peripheral surface bonded along a portion of the width thereof to said annular inner peripheral surface of said support member, said lower wall portion including an annular outer peripheral surface, a plurality of gripper means supported in an annular array on said annular outer peripheral surface of said lower wall portion, said annular array of gripper means being operable to engage and grip a tread and a radial tread ply band disposed centrally of said annular array of gripper means upon expansion of said tube element, said tube element when expanded effecting a decrease in diameter of said annular array of gripper means and when contracted effecting an increase in the diameter of said annular array of gripper means to thereby effect the release of a gripped tread and radial tread ply band, a plurality of ply bands disposed only in said lower wall portion adajcent said plurality of gripper means to increase the rigidity of said lower wall portion to provide for uniform radial movement of said lower wall portion and said gripper means disposed thereon upon expansion of said tube element to effect gripping of a tread and

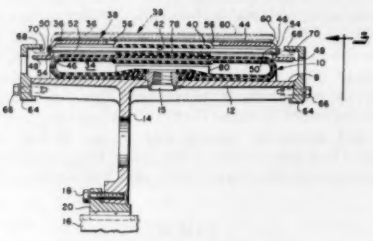
a radial tread ply band thereby and to prevent collapse of said tube element upon contraction.

4,148,682

FLUID EXPANDABLE TIRE BUILDING DRUM

Marcus H. Collins, Akron, and Kiritkumar R. Patel, Broadview Heights, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 5, 1977, Ser. No. 813,153
Int. Cl.[2] B29H *17/16*
U.S. Cl. 156—416 **8 Claims**



1. A fluid expandable drum for building a tread and a radial tread ply band in a tire building machine comprising an annular support drum having an annular outer surface thereon, an expandable annular tube element having an inner peripheral surface supported on said annular outer surface of said support drum and an outer annular peripheral surface, building means movable with said outer annular peripheral surface of the tube element and defining an annular building surface thereon which is movable in a radial direction toward and away from said annular support drum upon contraction and expansion, respectively, of said tube element, said tube element being expanded to expand the diameter of said building surface to enable a tread and a radial tread ply band to be built thereon and contracted to decrease the diameter of said building surface to enable a built tread and radial tread ply band to be removed therefrom, said tube element including a radial ply extending around the cross-sectional circumference of the tube element and a radial ply band extending around said outer peripheral surface of said tube element to increase the strength and resiliency of the outer peripheral surface to enable said building surface defined by said building means to decrease in diameter upon contraction of said tube element, said tube element further including an inner interior surface, an outer interior surface, and an annular filler block disposed on said inner interior surface for decreasing the volume of said tube element to decrease the volume of the fluid needed to expand the tube element to a predetermined diameter, said filler block further acting to add rigidity to said inner peripheral surface and said inner interior surface to prevent sagging in a radially outwardly direction of said outer peripheral and outer interior surfaces upon contraction of said tube element.

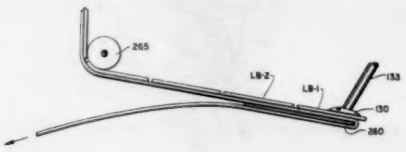
4,148,683

CONE LABELING, SEPARATING AND RESTACKING APPARATUS AND METHOD

Robert G. Potts, 2705 Wood Ave., Chattanooga, Tenn. 37406

Division of Ser. No. 669,250, Mar. 22, 1976, Pat. No. 4,052,250, which is a division of Ser. No. 497,554, Aug. 15, 1974, Pat. No. 3,981,407. This application Sep. 15, 1977, Ser. No. 833,449
Int. Cl.[2] B65C *9/18*
U.S. Cl. 156—556 **2 Claims**

1. Labeling apparatus for cones, wherein a label is to be placed within the larger end of a frustum of a cone while said cone is supported adjacent to said labeling apparatus, said labeling apparatus comprising means for holding a label, said means for holding a label being movable from a label receiving position to a label depositing position, vacuum means for retaining a label on said label holding means, and vacuum neutralizing means for causing a label to be released from said label holding means, a supply of a continuous strip of labels, said continuous strip of labels including a plurality of said labels carried by a backing paper, said labeling apparatus further including feed means for feeding said strip of labels from said supply, said feed means including a shoe for receiving said strip of labels thereover, said shoe being slidable between a first



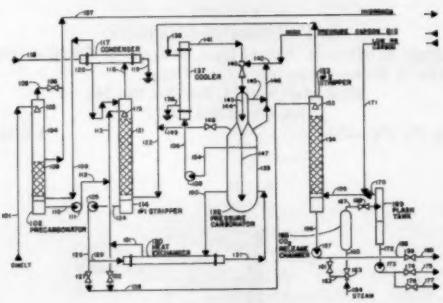
position wherein a label is placed adjacent to said means for holding a label in said label receiving position, and a second position spaced from said first position wherein said label holding means can move to said label depositing position, positioning means carried by said shoe for positioning said labels with respect to said shoe, power means for moving said shoe to said first position, and rewind means for winding said backing paper and moving said shoe to said second position.

4,148,684

METHODS FOR RECOVERY AND RECYCLING OF CHEMICALS FROM SODIUM SULFITE AND SODIUM BISULFITE PULPING OPERATIONS

William G. Farin, Neenah, Wis., assignor to MEI Systems Inc., Menasha, Wis.

Continuation-in-part of Ser. No. 739,719, Nov. 8, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 840,996
Int. Cl.[2] D21C *11/02*
U.S. Cl. 162—36 **17 Claims**



1. An improved method for the recovery of sodium and sulfite components from the smelt derived from spent sodium sulfite and sodium bisulfite cooking liquor and the preparation of fresh liquor therefrom in which the spent liquor is burned under reduction conditions to a smelt comprised primarily of sodium sulfide and sodium carbonate, the smelt is dissolved in water, the resulting solution clarified, and the clarified solution then processed by the steps of:

(1) precarbonating the said clarified smelt solution with a gas comprising hydrogen sulfide, carbon dioxide and water vapor to convert the sodium sulfide component to sodium hydrosulfide and sodium carbonate, and a portion of the sodium carbonate component to sodium bicarbonate while absorbing a portion of the carbon dioxide and concentrating the hydrogen sulfide which is then released; (2) desulfiding the precarbonated solution by stripping said precarbonated solution with gas containing carbon dioxide and water vapor, to reduce the partial pressure of the

hydrogen sulfide which is released from the precarbonated solution during desulfiding and raise the temperature of the precarbonated solution by condensation, while reacting the precarbonated solution with a concentrated sodium bicarbonate solution in which the concentration of sodium bicarbonate is maintained sufficiently high to hold the partial pressure of the carbon dioxide created by the reacted concentrated sodium bicarbonate and precarbonated solutions above the partial pressure of the carbon dioxide provided by the gas utilized for stripping during the stripping operation, thereby preventing carbonation or formation of sodium bicarbonate by carbon dioxide absorption during said stripping, while converting the sodium hydrosulfide in said reacted solution to sodium carbonate, venting said relased hydrogen sulfide and a portion of the carbon dioxide and water vapor used for said stripping for use in step one; (3) pressure carbonating at least a portion of the sodium carbonate obtained in step two with carbon dioxide maintained at a pressure above 1.2 atmospheres to convert said portion into a solution with a high concentration of sodium bicarbonate and recycling at least a portion of the high concentration sodium bicarbonate solution to step two; (4) decarbonating a portion of the solution from step two containing sodium carbonate and sodium bicarbonte by reacting with sodium bisulfite at a pressure above 1.2 atmospheres to form sodium sulfite and carbon dioxide at pressures above 1.2 atmospheres and recycling the pressurized carbon dioxide to step three; (5) reacting the sodium sulfite formed in step four with sulfur dioxide to form sodium bisulfite suitable for use in cooking liquor.

4,148,685

PROCESS AND APPARATUS FOR SHUTDOWN AND CONTROL OF A GAS-COOLED NUCLEAR REACTOR

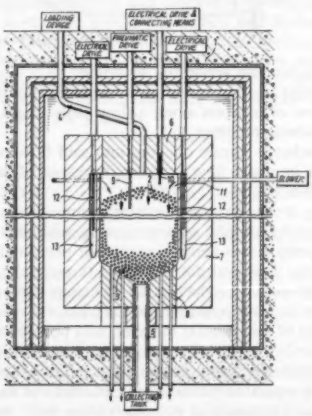
Siegfried Brandes, Schriesheim, Fed. Rep. of Germany, assignor to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Filed Mar. 22, 1977, Ser. No. 780,046

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1976, 2612178

Int. Cl.[2] G21C *7/08*

U.S. Cl. 176—36 R **9 Claims**



1. A method for regulating and shutting-down a gas-cooled nuclear reactor of the type having a core comprising a pile of spherical fuel elements through which the cooling gas passes and which are expended after a single pass through the reactor and having a reflector surrounding the core comprising a top reflector spaced from the top of the fuel element pile to define a space therebetween, a cylindrical side reflector and a bottom reflector, said method comprising the steps of:

regulating the operation of the reactor by moving first absorber rods from above into and out of recesses provided in the side reflector;

rapidly and partially shutting down the reactor by inserting second absorber rods, independent from said first absorber rods, downwardly through the top reflector and into the space formed between the top reflector and the fuel element pile; and

totally shutting-down the reactor for a long term by inserting third absorber rods, independent from said second absorber rods, downwardly through the top reflector and into the pile of fuel elements.

4,148,686

AUXILIARY COOLING DEVICE FOR THE PRIMARY FLUID HEAT EXCHANGER OF A NUCLEAR REACTOR

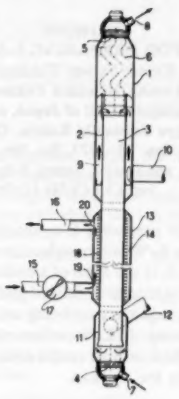
Pierre Pouderoux, Meudon, France, assignor to Stein Industrie S.A., Velizy-Villacoublay, France

Filed Dec. 10, 1976, Ser. No. 749,261

Claims priority, application France, Dec. 18, 1975, 75 38835

Int. Cl.[2] G21C *9/00*

U.S. Cl. 176—38 **13 Claims**



1. An auxiliary cooling device for absorbing residual energy in a primary fluid heat exchanger of a nuclear reactor which continues to generate energy after shut down, said exchanger comprising a casing for conveying a flow of primary fluid heated in the reactor and a nest of tubes disposed inside the casing for conveying a secondary cooling fluid in thermal contact with the primary fluid, said auxiliary cooling device comprising a jacket disposed around the casing and including inlet means and outlet means for an auxiliary cooling fluid, and auxiliary heat exchange surfaces projecting from said casing into the space around the casing inside said jacket.

4,148,687

METHOD FOR SAVINGS IN NUCLEAR REACTORS BY USING BERYLLIUM RODS IN FUEL BUNDLES

Ji-Peng Chien; Chao-Yie Yang, and Horng-Ming Hsich, all of Tao-Yuan, Taiwan, assignors to Institute of Nuclear Energy Research, Tao Yuan Taiwan

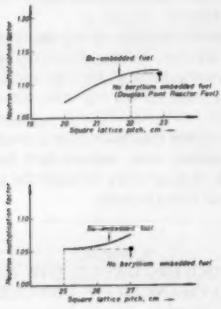
Filed Aug. 26, 1976, Ser. No. 717,575

Int. Cl.[2] G21C *1/06, 7/08, 3/30, 5/00*

U.S. Cl. 176—42 **4 Claims**

1. In a heavy water moderated and cooled, natural uranium fueled nuclear reactor in which 19 fuel rods are arranged in a fuel bundle having a predetermined lattice pitch of 22.86 centimeters, one of said rods being located centrally within said bundle, the improvement which comprises replacing said cen-

tral fuel rod with a rod comprising beryllium or its compounds whereby a lattice pitch of the resulting fuel bundle is reduced


Be-embedded fuel
No beryllium embedded fuel (Douglas Point Reactor Fuel)
Square lattice pitch, cm
No beryllium embedded fuel
Square lattice pitch, cm

to 22 centimeters by the utilization of the (n, 2n) reaction effect on the beryllium without substantially detrimentally affecting the neutron multiplication value of the reactor.

4,148,688

PROCESS FOR PREPARING L-METHIONINE

Hideaki Yamada, Kyoto; Satomi Takahashi, Takatsuki; Kazushige Sumino, Akashi; Hirotaka Fukumitsu, Kakogawa, and Koji Yoneda, Amagasaki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 28, 1977, Ser. No. 763,710

Claims priority, application Japan, Feb. 4, 1976, 51-11574

Int. Cl.[2] C12D *13/06*

U.S. Cl. 195—29 **8 Claims**

1. A process for preparing L-methionine which comprises subjecting DL- or L-N-carbamoylmethionine to the action of an enzyme which is in the form of a cultured broth containing a microorganism or separated cells of said microorganism in an aqueous medium, said enzyme being capable of hydrolyzing the carbamoyl group of L-N-carbamoylmethionine so as to substantially produce only L-methionine, and recovering said L-methionine from the medium.

4,148,689

IMMOBILIZATION OF MICROORGANISMS IN A HYDROPHILIC COMPLEX GEL

Tsunetoshi Hino, Higashiosaka; Hideaki Yamada, and Seizo Okamura, both of Kyoto, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Filed May 5, 1977, Ser. No. 794,047

Claims priority, application Japan, May 14, 1976, 51-55925; May 27, 1976, 51-62041; Feb. 10, 1977, 52-13650

Int. Cl.[2] C12K *1/00*; C07G *7/02*

U.S. Cl. 195—65 **14 Claims**

1. A process for producing a hydrophilic complex xerogel in which microbial cells are immobilized, which comprises mixing an aqueous solution of a water-soluble-polymer compound selected from the group consisting of polyvinylalcohol, gelatin and carboxymethylcellulose with a tetraalkoxysilane of the general formula: $Si(OR)_4$, wherein R represents an alkyl group of up to 12 carbon atoms, hydrolyzing the resulting mixture by addition of an acid or acidic compound to form a transparent homogeneous complex sol, and dispersing the microbial cells in said sol homogeneously, at a pH between 4 and 8 and subsequently gelling the mixture of said sol and said microbial cells by drying, the amount of said tetraalkoxysilane, calculated based on SiO_2 formed by acid hydrolysis, being 5 to 300% by weight of the dry weight of said water-soluble-polymer.

4,148,690

BIOPHOTOLYSIS OF WATER

Howard H. Weetall, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 771,945, Feb. 25, 1977, abandoned. This application Nov. 28, 1977, Ser. No. 855,359

Int. Cl.[2] C12B *1/00*; C12K *1/00*

U.S. Cl. 195—115 **25 Claims**

1. A process for the continuous photometabolic production of molecular hydrogen from water which comprises the steps of:

(a) continuously reacting an aqueous solution of a reversibly reduceable cofactor in the presence of light with a preparation of a photometabolically active preparation of a first microorganism under conditions sufficient to reduce at least a portion of the cofactor in the solution;

(b) reacting the reaction product of step (a) in the presence of light with a photometabolically active preparation of a second microorganism capable of oxidizing the reduced cofactor and releasing molecular hydrogen into the solution;

(c) collecting the molecular hydrogen released in step (b); and

(d) returning the solution to the microorganism preparation of step (a).

4,148,691

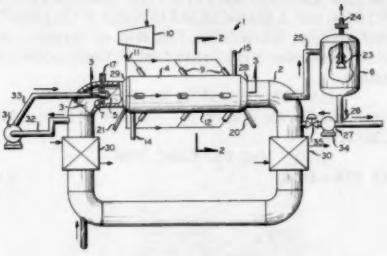
FERMENTATION APPARATUS

Emil A. Malick, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 29, 1977, Ser. No. 782,599

Int. Cl.[2] C12B *1/14*

U.S. Cl. 195—142 **12 Claims**



1. A fermentation apparatus including:

(a) a tubular member forming a substantially continuous loop for flow of medium along a flow path in and defined by said tubular member;

(b) a discharge nozzle opening into said flow path and directed into said flow path for discharge of medium into said flow path;

(c) pump means having an outlet communicating with said nozzle and an inlet communicating with said flow path, said pump means being operable for pressurizing medium from the flow path for discharge through the nozzle;

(d) a heat exchanger having an upstream end and a downstream end and positioned in heat transfer relation with a portion of said tubular member, said portion of said tubular member being located adjacent to and downstream of the nozzle and upstream of the pump means inlet;

(e) phase separator means having an inlet and an outlet, said separator means inlet communicating with the flow path at a point downstream of said portion of said tubular member and upstream of the pump means inlet;

(f) a plurality of injectors opening into the flow path between the nozzle and the inlet of the phase separator means, said injectors being adapted to be connected to a source of oxygen; and

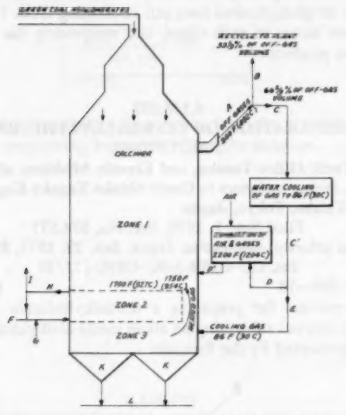
(g) a plurality of mixing vanes positioned in the flow path

between the nozzle and the inlet of the phase separator means for effecting mixing of fluid flowing along the flow path, said vanes being helically disposed.

4,148,692
PROCESS FOR PRODUCING LOW REACTIVITY CALCINED COKE AGGLOMERATES

Vincent H. K. Chu; Louis G. Benedict, and Sidney V. Fox, all of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 26, 1977, Ser. No. 828,055
Int. Cl.[2] C10B 57/12
U.S. Cl. 201—36 **8 Claims**



1. An improved process for producing calcined coke agglomerates from green coal agglomerates, wherein said green coal agglomerates are calcined in a calciner at a temperature within the range of 1700° F. to 1950° F. (927° C. to 1066° C.), said calcined coke agglomerates characterized by having a reactivity to carbon dioxide of 2% to 8%, said process comprising introducing a gaseous atmosphere containing at least 20% by volume of at least one straight chain aliphatic hydrocarbon gas taken from the group consisting of methane, ethane, propane and butane and admixtures thereof into a bed of calcined coke agglomerates in said calciner whereby said hydrocarbon gas is cracked producing carbon and hydrogen, said carbon being relatively unreactive vitreous carbon which is deposited on the surface, in the fissures and in the pores of said calcined coke agglomerated to thereby limit the reactivity of said calcined coke agglomerates to carbon dioxide to a range which is between 2% and 8%.

4,148,693
HORIZONTAL CYLINDRICAL DISTILLATION APPARATUS

William R. Williamson, Rte. 1, Box 4N, Mary Esther, Fla. 32569

Continuation of Ser. No. 553,114, Feb. 26, 1975, abandoned. This application Feb. 17, 1977, Ser. No. 769,695
Int. Cl.[2] C02B 1/06
U.S. Cl. 202—173 **7 Claims**

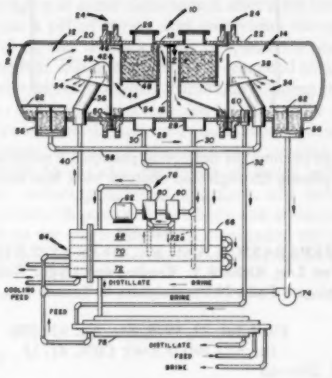
1. Flash evaporation apparatus comprising:

housing means comprising at least two opposed cylindrical shells and a central cylindrical vapor housing disposed between the opposed shells, the shells and the vapor housing being aligned in a horizontal disposition, the shells and the vapor housing having mating means for respectively joining the inner end of each of the shells to opposite outer ends of the vapor housing;

a wall member centrally disposed within the vapor housing and spaced from the outer ends of the vapor housing, the wall member being continuous to prevent communication between the shells through the vapor housing and to define two opposed and aligned housing chambers within the housing means, the housing chambers commonly sharing the wall member at innermost ends thereof;

entrance pipe means for carrying solute-laden liquid into portions of each of the housing chambers and directing the liquid thereinto in a generally upward flow path, the liquid not contacting the wall member;

a liquid flash and separator means disposed within each housing chamber adjacent to the wall member, the liquid flash and separator means separating outermost portions of each of the housing chambers from the vapor housing;



condensation means disposed within the housing means on either side of the wall member and between the wall member and the liquid flash and separator means for condensing the vapors exiting the housing chambers to a relatively pure distillate;

means for ducting the vapors to the condensation means; and,

means communicating the first housing chamber to the second housing chamber and ducting the relatively more concentrated effluent from the first chamber to the second chamber through the liquid flash and separator means in said second chamber.

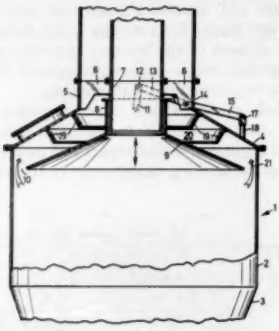
4,148,694
CONTAINER FOR LOOSE MATERIAL, IN PARTICULAR HOT COAL

Fritz Schulte, Meerbusch; Johann G. Riecker, Ratingen, and Horst Schroter, Viersen, all of Fed. Rep. of Germany, assignors to Hartung, Kuhn & Co., Maschinenfabrik GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Aug. 29, 1977, Ser. No. 828,914
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641566
Int. Cl.[2] C10B 31/04
U.S. Cl. 202—262 **3 Claims**

1. A container for loose material, in particular for hot coal during the operation of a coke oven battery, which container is provided with an upper inlet opening in the form of a feed pipe concentrically disposed within an adjacent container portion for providing loose material to said container and a lower, funnel-shaped outlet opening for the loose material, the improvement comprising a device for separating particulate matter from the gas emanating from the coke oven including a deflecting mechanism in the form of an umbrella-shaped guide plate which includes a cylindrical section surrounding said feed pipe for the material laden gas, said deflecting mechanism forming with an adjacent container wall an annular discharge channel from said container that widens in the direction of the flow of gases from said container, adjusting means connected to said container for moving said umbrella plate relative to said

feed pipe to control the cross-sectional area of said annular discharge channel and settling plates disposed in said annular



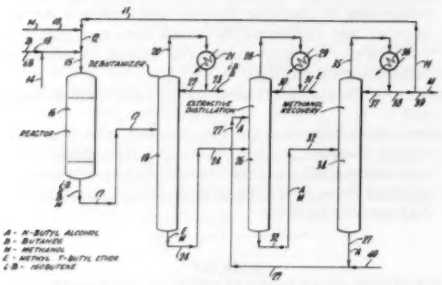
discharge channel for deflecting particulate material in the gas stream passing through said channel back into said container.

4,148,695

PREPARATION AND RECOVERY OF ETHERS

Kung-You Lee; Richard V. Kessler, and Uygur Kokturk, all of Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Jul. 27, 1978, Ser. No. 928,500
Int. Cl.[2] B01D *3/40*; C07C *41/12*
U.S. Cl. 203—63 **11 Claims**



1. The method which comprises

distilling a reaction mixture containing (i) a lower alkanol and (ii) an ether of said lower alkanol and t-butyl alcohol or t-amyl alcohol in an extractive distillation operation in the presence of, as an extractive distillation medium, a C_2–C_8 aliphatic alcohol having a higher boiling point than said lower alkanol and being substantially miscible therewith thereby forming (iii) extractive distillation overhead containing said ether and (iv) extractive distillation bottoms containing said lower alkanol and extractive distillation medium;

recovering said extractive distillation overhead containing said ether;

distilling said extractive distillation bottoms in a distillation operation thereby forming distillation operation overhead containing lower alkanol and distillation operation bottoms containing said extractive distillation medium;

recovering said distillation operation overhead containing lower alkanol;

recovering said distillation operation bottoms containing said extractive distillation medium; and

passing said distillation operation bottoms containing said extractive distillation medium to said extractive distillation operation.

4,148,696

ELECTROCHEMICAL OXIDATION OF ACTIVATED ALKYL AROMATIC COMPOUNDS

Mark A. Halter, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 20, 1978, Ser. No. 888,702
Int. Cl.[2] C25B *3/02*
U.S. Cl. 204—59 R **10 Claims**

1. A process for the electrochemical oxidation of an activated alkyl substituted aromatic compound which comprises subjecting said compound to an electrochemical oxidation in an electrochemical cell in the presence of a fatty acid, an alkali metal or alkaline earth metal salt thereof and a phase transfer agent comprising a symmetrical or asymmetrical tetraalkyl nitrogen or phosphorous base salt containing from 1 to about 20 carbon atoms in each chain, and recovering the resultant oxidative products.

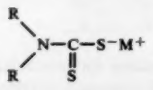
4,148,697

PREPARATION OF TETRAALKYLTHIURAM DISULFIDES

Sigeru Torii; Hideo Tanaka, and Kiyoshi Mishima, all of Okayama, Japan, assignors to Ouchi Shinko Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1978, Ser. No. 874,177
Claims priority, application Japan, Jan. 29, 1977, 52-8230
Int. Cl.[2] C25B *3/02*; C07C *155/10*
U.S. Cl. 204—78 **10 Claims**

1. A process for preparing a tetraalkylthiuram disulfide, which comprises subjecting an alkali metal dialkyldithiocarbamate represented by the formula:



wherein R represents an alkyl group having 1 to 4 carbon atoms, and M is an alkali metal selected from the group consisting of sodium, potassium, and lithium, to electrolytic oxidation, whereby the carbamate is dimerized to form the corresponding tetraalkylthiuram disulfide, said electrolytic oxidation being conducted in the absence or presence of a supporting electrolyte in a two-layer electrolytic solution consisting essentially of an aqueous phase comprising water and a non-aqueous phase comprising carbon disulfide with electrodes in contact with the aqueous phase that contains the alkali metal dialkyldithiocarbamate dissolved therein, and allowing the resulting tetraalkylthiuram disulfide to be extracted by the non-aqueous phase.

4,148,698

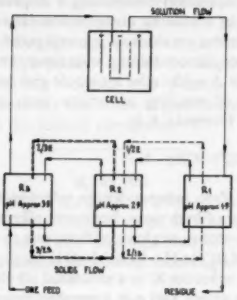
REFINING OF FERROUS AND BASE METAL SULPHIDE ORES AND CONCENTRATES

Peter K. Everett, Chatswood, Australia, assignor to Dextec Metallurgical Proprietary Limited, Australia

Filed Mar. 28, 1977, Ser. No. 782,178
Claims priority, application Australia, Apr. 1, 1976, PC5455
Int. Cl.[2] C25C *1/16, 1/18*
U.S. Cl. 204—118 **5 Claims**

1. A process for extracting a base metal from a base metal bearing ore or concentrate, base metal being lead and/or zinc, which includes forming a slurry of the ore or concentrate with an electrolyte containing chloride ions and copper ions, intimately mixing oxygen bearing gas with the slurry, maintaining the mixture substantially at atmospheric pressure at a temperature up to the boiling point of the electrolyte, and maintaining the pH of the mixture from 1.5 to 7.0, whereby iron solubilised in the process is substantially precipitated as ferric oxide, sulphide sulphur oxidised under the conditions is substantially converted to elemental form, and the base metal is taken into

solution, mixing the resulting solution with base metal sulphide ore or concentrate to allow the precipitation of ionic copper



from solution, separating the solution from the precipitate, and thereafter recovering base metal from the solution.

4,148,699

ELECTROPOLISHING OF STAINLESS STEEL

Peter Mayer, Burlington; Robert W. Blair, Perth, and Mohammed Zamin, Mississauga, all of Canada, assignors to Heritage Silversmiths Limited, Perth, Canada

Division of Ser. No. 814,271, Jul. 8, 1977. This application May 8, 1978, Ser. No. 903,559

Claims priority, application United Kingdom, Jul. 20, 1976, 30223/76

Int. Cl.[2] C25F *3/24*

U.S. Cl. 204—129.85 **9 Claims**

1. A method for the formation of a mirror-like finish on a stainless steel item, which comprises

(1) immersing said item in an electropolishing bath to a depth such that the hydrostatic pressure on said item is less than about 1.2 psi determined at 85° C., said electropolishing bath comprising orthophosphoric acid and sulphuric acid in a relative weight proportion of about 1:1 to about 2:1 and a total amount of about 55% to about 75% by weight of the bath and at least one corrosion inhibitor, said electropolishing bath having a specific gravity determined at a temperature of about 85° C., in the range of about 1.63 to about 1.78 and a dissolved iron concentration of at least about 0.5 by weight up to saturation of said bath by iron salts;

(2) subjecting said immersed item to anodic electrochemical treatment in said electropolishing bath at an applied voltage of about 6 to about 15 volts and a current density of about 2 to about 9 amp/sq. in at a bath temperature of about 70° to about 100° C. using a specific gravity and dissolved iron concentration within the above-specified ranges and for a time sufficient that an external surface of the treated item has a surface roughness of less than about 2 microinches and a mirror-like appearance; and

(3) forming a corrosion-resistant external transparent oxide coating on the item by immersing said electropolished item in an aqueous nitric acid bath having a concentration of about 20 to about 40 vol.% HNO_3 at a temperature of about 45° to about 70° C. for at least about 20 minutes.

4,148,700

METHOD FOR PURIFYING THE LIQUOR OF A GALVANIZING PROCESS PLANT AFTER CONTAMINATION

William L. Eddleman, Houston, Tex., assignor to David B. Dean, Houston and Douglas B. Hayden, Jr., Beaumont, both of, Tex.; part interest to each

Continuation of Ser. No. 732,479, Oct. 14, 1976, abandoned, which is a continuation of Ser. No. 582,838, Jun. 2, 1975, abandoned. This application Jun. 5, 1978, Ser. No. 912,338

Int. Cl.[2] C25B *1/22*; C25C *1/06*; C25B *13/02, 13/08*

U.S. Cl. 204—130 **11 Claims**

1. A method of removing metallic and acid ions from the liquor of a pickling or metal cleaning tank after it has been used and which has a pH of strong acid comprising the steps of passing a DC current through a pair of spaced current electrodes immersed in said liquor which are separated by an ionic permeable microporous polymer diaphragm dividing the tank of liquor into two parts and which diaphragm permits cations and anions to pass therethrough and which diaphragm is inherently hydrophobic and specially processed to provide a pore structure which blocks the movement of water molecules therethrough, including water of hydration, and forming a removable metallic deposit at the cathode and a substantially purified acid on the anode side of the diaphragm, the current flow through the diaphragm being by ionic movement.

4,148,701

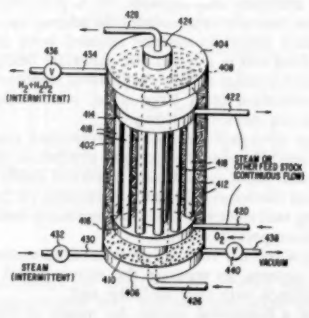
HIGH EFFICIENCY ENERGY TRANSFER TECHNIQUE

Sam L. Leach, P.O. Box 2536, Palos Verdes Peninsula, Calif. 90274

Continuation-in-part of Ser. No. 790,320, Apr. 25, 1977, Pat. No. 4,113,589. This application Sep. 19, 1977, Ser. No. 834,682

Int. Cl.[2] B01J *1/10*

U.S. Cl. 204—157.1 R **32 Claims**



31. A method for applying high frequency energy to a feedstock comprising the steps of:

supplying water vapor to a reaction chamber;

applying high intensity radiation in an absorption band of said water vapor to said reaction chamber to dissociate said water vapor, by heating wires coated with host and sensitizer material to an elevated temperature;

supplying additional air to said reaction chamber to form hydrogen peroxide and concurrently supply heat to said reaction chamber; and

drawing off product gases including hydrogen peroxide from said reaction chamber.

4,148,702
TREATMENT OF COATED FABRIC SCRAP

Maxwell J. Lane, Mt. Eliza, Australia, assignor to Nylex Corporation Limited, Australia

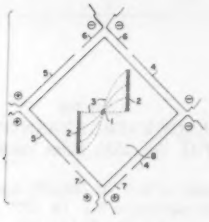
Filed Aug. 11, 1975, Ser. No. 603,760
Claims priority, application Australia, Aug. 14, 1974, PB8518
Int. Cl.[2] C08J 3/28; C08L 3/00
U.S. Cl. 204—159.12 7 Claims

1. A method for facilitating the processing of scrap materials having a composite structure consisting of one or more polymer components and a fibre or fabric component, which method comprises, subjecting the scrap material to high energy radiation to a total dosage sufficient to selectively degrade the fibre or fabric component but which is insufficient to induce significant degradation of the polymer, and recovering the irradiated scrap for reprocessing.

4,148,703
METHOD OF ELECTROPHORETIC PURIFICATION OF ENZYMES AND PEPTIDES BY MEANS OF AN ADJUSTABLE, SPECIALIZED, GEOMETRICALLY LOCATED ELECTRODE SYSTEM

Moshe Trop, and Joseph Herbst, both of Brooklyn, N.Y., assignors to Morton Weintraub and Bernard Gendelman, both of Brooklyn, N.Y.

Filed Feb. 11, 1976, Ser. No. 657,232
Int. Cl.[2] G01N 27/26, 27/30
U.S. Cl. 204—180 G 7 Claims



1. An improvement in the method of electrophoretic purification of enzymes and peptides on a polyacrylamide gel, wherein the improvement includes the adaptation of geometrically located electrode systems situated both in a vertical electrical field and in a horizontal electrical field, which said improvement enables a high purification simultaneously as it allows purification on a large scale, which said improved method having steps comprising:

Situating divergent geometrically located and divergent geometrically shaped electrode systems in two separate electrical fields, which said electrical fields comprise a vertical electrical field and a horizontal electrical field;

operating said electrical fields intermittently during selective repetitive periods of time;

applying a vertical vector, by means of the vertical electrical field systems, to separate the enzymes and peptides in accordance with their mobility; and,

applying a horizontal vector, by means of the horizontal electrical field systems, to cause the enzymes and peptides to move horizontally.

4,148,704
METHOD FOR CATHODIC ELECTRODEPOSITION OF COATING COMPOSITIONS CONTAINING DIELS-ALDER ADDUCTS

Ivan H. Tsou, Bloomfield Hills, Mich., assignor to Grow Chemical Corp., New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,296
Int. Cl.[2] C25D 13/04
U.S. Cl. 204—181 C 10 Claims

1. A method of electrocoating a film forming substance onto a substrate by employing an anode, a cathode and an electrolyte therebetween comprising the steps:

(1) Providing an aqueous electrolyte containing an organic coating composition comprising a dispersion, solution or suspension of a coating composition characterized by:

(a) the reaction product of a conjugated fatty acid ester and an acrylic containing monomer; and

(b) Formula A within the molecule and being the reaction product of reacting an amine with an oxirane ring; wherein Formula A is:

$$—CH_2—C(Z)—CH_2—N=$$

wherein Z is independently selected from the group consisting of hydrogen, hydroxyl, alkoxy of from one to 6 carbon atoms; acyloxy of from one to 6 carbon atoms; (=O),$+OR'+_n$H, $+OR'+_n$OH, and $+OR'(CH_2OH-)+_n$OH; wherein R' is a saturated alkylene of from 2 to 4 carbon atoms and n is a number from 1 to 6;

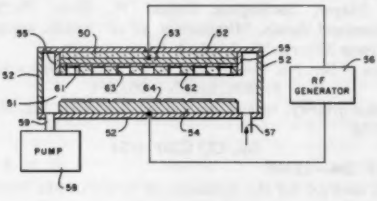
(2) Closing the circuit between the anode and the cathode; and

(3) Depositing the film forming composition onto the cathodic substrate.

4,148,705
GAS PLASMA REACTOR AND PROCESS

James F. Battey, Los Altos; Richard L. Bersin, San Lorenzo; Richard F. Reichelderfer, Castro Valley, and Joseph M. Welty, Fremont, all of Calif., assignors to Dionex Corporation, Hayward, Calif.

Continuation-in-part of Ser. No. 663,271, Mar. 3, 1976, abandoned. This application Mar. 4, 1977, Ser. No. 774,239
Int. Cl.[2] C23C 15/00; C23F 1/00
U.S. Cl. 204—192 E 16 Claims



1. In a process for etching aluminum, the steps of: providing a pair of spaced apart electrodes, placing a dielectric member between the electrodes, placing the aluminum to be etched between the dielectric member and one of the electrodes, introducing a reagent gas into the region between the electrodes, cyclically energizing and deenergizing the electrodes to periodically ionized the gas thereby form a plasma for etching the aluminum, and introducing a gas selected from the group consisting of an oxidizing gas, a reducing gas or a combination thereof into the region between the electrodes while the electrodes are deenergized.

8. In plasma etching apparatus: means defining an etching chamber, a pair of spaced apart electrodes for producing an electric field within the chamber when energized, means for introducing a reagent gas into the chamber, means for energizing the electrodes to ionize the gas and thereby form a plasma in the region between the electrodes, and a generally planar dielectric member having openings therein positioned between the electrodes for concentrating the plasma in predetermined portions of the region between the electrodes, and means for supporting a material to be etched between the electrodes and spaced axially from the openings in the dielectric member.

11. In a gas plasma reactor: first and second spaced apart electrodes forming oppositely disposed walls of a reaction chamber, an electrically insulative wall extending between the electrodes and forming an additional wall of the reaction chamber, means for introducing a reagent gas into the cham-

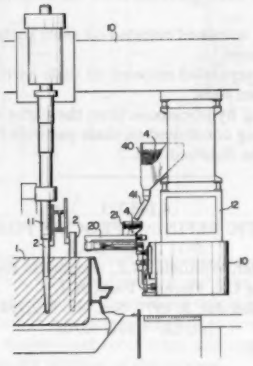
ber, means for applying an ionizing current to the electrodes to excite the gas and form a plasma in the chamber, and a dielectric member overlying the first electrode and abutting against the insulative wall to completely isolate the first electrode from the portion of the chamber in which the plasma is formed, the dielectric member having a greater impedance to the ionizing current than the plasma formed between the electrodes whereby the ionizing current and plasma are distributed throughout substantially the entire region between the dielectric member and the second electrode.

4,148,706

ANODE PASTE FILLING APPARATUS FOR AN ALUMINUM ELECTROLYTIC CELL

Tadaaki Ohiwa, and Yosio Kawase, both of Nagoya, Japan, assignors to Sumitomo Aluminium Smelting Co., Ltd., Osaka, Japan

Filed Feb. 2, 1978, Ser. No. 874,525
Claims priority, application Japan, Feb. 7, 1977, 52-12798
Int. Cl.[2] C25C *3/14, 3/22*
U.S. Cl. 204—245 **10 Claims**



1. An apparatus for filling an anode hole in a vertical Soderberg aluminum electrolytic cell with anode paste comprising

an anode paste charging arm for charging anode paste into a hole formed upon removal of an anode stud from the anode of said aluminum electrolytic cell, said arm comprising an anode paste input, a paste conveying means, a paste output, a horizontally disposed guide an associated slide cooperating therewith, and means for horizontally moving said slide along said guide to position said paste output at a desired location;

a hopper for storing anode paste; and,

means for feeding stored anode paste from said hopper to said anode paste input, said anode paste charging arm, said hopper and said means for feeding being provided on a support movable along said aluminum electrolytic cell.

4,148,707

ELECTROCHEMICAL FINISHING OF STAINLESS STEEL

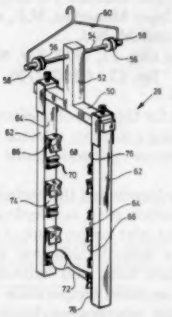
Peter Mayer, Burlington; Robert W. Blair, Perth, and Mohammed Zamin, Mississauga, all of Canada, assignors to Heritage Silversmiths Limited, Perth, Canada

Division of Ser. No. 814,271, Jul. 8, 1977, Pat. No. 4,118,301.
This application Jul. 18, 1978, Ser. No. 925,769
Int. Cl.[2] C25F *7/00, 3/00*; C25D *17/08*
U.S. Cl. 204—297 W **8 Claims**

1. A rack for mounting a plurality of stainless steel items in generally parallel horizontal alignment for electrochemical polishing in an electrolyte, comprising

first and second upright parallel electrically-conductive members suspended from a common electrically-conductive cross-arm member, and

a plurality of pairs of cooperating supporting means mounted to said upright members for supporting one of said stainless steel items between each said pair in generally horizontal alignment,



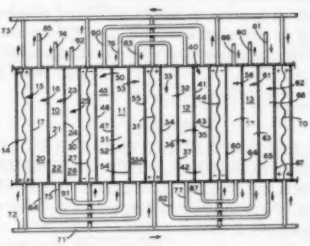
one member of each of said supporting means pairs being an electrically-conductive biasing means mounted in electrical connection to one of said upright members and the other member of each of said supporting means pairs being an electrically-insulating means mounted to the other of said upright members and constructed to contact only a small portion of the item engaging the same.

4,148,708

COMBINATION ION EXCHANGE AND ELECTRODIALYSIS FLUID PURIFICATION APPARATUS

Philip J. Grant, Lynchburg, Va., assignor to The Babcock & wilcox Company, New York, N.Y.

Filed Jul. 22, 1977, Ser. No. 817,952
Int. Cl.[2] B01D *13/02*
U.S. Cl. 204—301 **9 Claims**



1. A cell structure for separating an ionized solution into streams of concentrated acid, concentrated alkali and deionized fluid comprising a bed of mixed anion and cation resih, an anion membrane forming a partition for a side of said mixed resin bed, a cation membrane forming a partition for another side of said mixed resin bed, an anion resin bed adjacent to said anion membrane, a cation membrane forming a partition for a different side of said anion resin bed, an anode spaced from said anion resin bed and said cation membrane, a cation resin bed adjacent to said cation membrane that forms a partition for another side of said mixed resin bed, an anion membrane forming a partition for a different side of said cation resin bed, and a cathode spaced from said cation resin bed and said anion membrane that partitions said cation resin bed.

6. A cell structure for removing tritium from water comprising a feed inlet compartment, an anion membrane forming a

side of said compartment, a cation membrane forming another side of said compartment, and material within said compartment for preferentially removing the tritium from the water.

4,148,709

HYDROLIQUEFACTION OF SUB-BITUMINOUS AND LIGNITIC COALS TO HEAVY PITCH

Morgan C. Sze, Upper Montclair, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Oct. 27, 1977, Ser. No. 845,822
Int. Cl.[2] C10G *1/06, 1/00*
U.S. Cl. 208—10 **9 Claims**

1. In a process for the hydroliquefaction of a hydroliquefaction feed containing a member selected from the group consisting of sub-bituminous coal and lignitic coal, the improvement comprising:

introducing hydrogen and the hydroliquefaction feed into a hydroliquefaction zone, said hydroliquefaction zone being operated at an inlet temperature of from 725° F. to 855° F.;

withdrawing a hydroliquefaction effluent from said hydroliquefaction zone, said hydroliquefaction zone being operated at an outlet temperature of from 775° F. to 905° F., said outlet temperature being no more than 50° F. greater than the inlet temperature; and

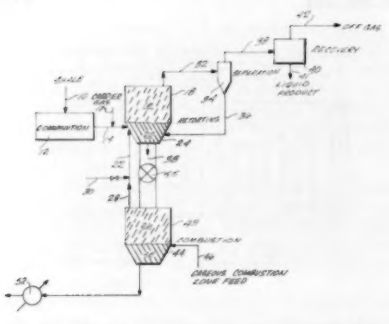
providing hot recycle from the outlet portion of said hydroliquefaction zone to said inlet to heat the hydroliquefaction feed which is at a temperature of from 575°–700° F. to said inlet temperature and control and maintain said inlet temperature, whereby the outlet temperature is no more than 50° F. greater than the inlet temperature.

4,148,710

FLUIDIZED BED PROCESS FOR RETORTING OIL SHALE

Robert S. Burton, III, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jun. 13, 1977, Ser. No. 805,883
Int. Cl.[2] C10G *1/02*
U.S. Cl. 208—11 R **4 Claims**



1. A method for recovery of values from oil shale comprising the steps of:

(a) introducing particulate oil shale feed containing carbonaceous material to a retorting zone fluidized bed wherein the retorting zone fluidized bed is fluidized at least partly by an upward flow therethrough of combustion gases substantially free of free oxygen and which do not react with products of retorting in a deleterious manner, the combustion gases maintaining the retorting zone fluidized bed at a temperature sufficient to retort oil shale to yield, as products of retorting, retorted oil shale containing residual carbonaceous material and retorting vapors comprising volatilized hydrocarbons;

(b) passing retorted oil shale particles containing residual carbonaceous material from the bottom of the retorting zone fluidized bed downwardly to the top of a combustion zone fluidized bed by means of a rotary vane feeder;

(c) introducing a gaseous source of oxygen into the combustion zone fluidized bed for fluidizing the combustion zone fluidized bed and for oxidizing residual carbonaceous material contained in retorted oil shale particles present in the combustion zone fluidized bed to yield combusted oil shale and combustion gases;

(d) passing such combustion gases upwardly from the combustion zone fluidized bed to the retorting zone fluidized bed for fluidizing the retorting zone fluidized bed and for maintaining the retorting zone fluidized bed at a temperature sufficient to retort oil shale, wherein the combustion zone and retorting zone fluidized beds are contained in separate vessels, with the vessel containing the retorting zone fluidized bed being directly above the vessel containing the combustion zone fluidized bed, the upper portion of each vessel being expanded for disengagement of oil shale particles from fluidizing gas;

(e) withdrawing a vapor mixture of combustion gases and retorting vapors comprising hydrocarbons and entrained retorted oil shale particles from the retorting zone fluidized bed;

(f) separating entrained retorted oil shale particles from the vapor mixture;

(g) recycling separated retorted oil shale particles to one of said fluidized beds;

(h) condensing hydrocarbons from the vapor mixture; and

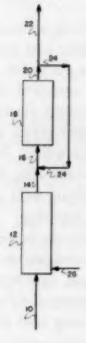
(i) withdrawing combusted oil shale particles from the combustion zone fluidized bed.

4,148,711

CATALYTIC REFINING PROCESS FOR TANK BOTTOMS WAX

Clinton H. Holder, Westfield, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 5, 1977, Ser. No. 812,795
Int. Cl.[2] C10G *43/02*
U.S. Cl. 208—27 **5 Claims**



1. A process for hydrofining a deoiled, deasphalted tank bottoms microwax containing no more that 5 wt.% oil, having a melting point of at least about 180° F. and exhibiting a UV absorption no greater than 0.70 at a wave length of 290 nm measured by ASTM D-2008 which comprises contacting said wax and hydrogen with a hydrofining catalyst in a first stage at a temperature ranging from 550° to 700° F. to produce a reaction mixture and then contacting said mixture and hydrogen with a hydrofining catalyst in a second stage at a temperature between about 450° to 575° F. and at least 50° F. lower than the temperature in the first stage to produce a hydrofined microwax product having a color of not more than 1.0 as measured by ASTM D-1500 and gradually increasing the temperature of the catalyst in the first stage to overcome loss of cata-

lyst activity therein as the catalyst ages and wherein the hydrogen pressure in said stages ranged from between about 1000 to about 3500 psig, the amount of catalyst in the second stage being greater than the amount of catalyst in the first stage, said hydrofined product meeting the requirements of step B of 21 CFR 121.1156 as herein defined.

4,148,712

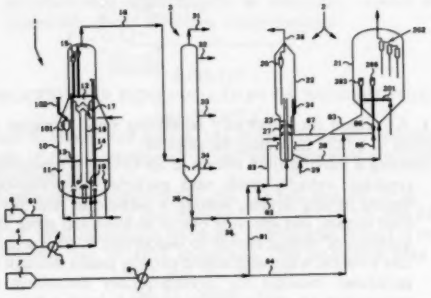
METALS PASSIVATION WITH CATALYST FINES

Richard H. Nielsen; Dwight L. McKay, and Glenn H. Dale, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 773,234, Mar. 1, 1977, abandoned. This application Jun. 29, 1978, Ser. No. 920,618

Int. Cl.[2] C10G *11/06*; B01J *8/24*

U.S. Cl. 208—78 **12 Claims**



1. A cracking process which comprises contacting a hydrocarbon feedstock, a cracking catalyst and as an added passivating agent used antimony containing cracking catalyst fines under hydrocarbon cracking conditions to produce a cracked hydrocarbon mixture and recovering said cracked hydrocarbon mixture as the product of the process.

4,148,713

ZSM-5 PARTICLE CONTAINING ALUMINUM-FREE SHELLS ON ITS SURFACE

Louis D. Rollmann, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 726,353, Sep. 24, 1976, Pat. No. 4,088,605. This application Jan. 9, 1978, Ser. No. 868,147

Int. Cl.[2] C10G *13/04*; B01J *8/24, 29/28*

U.S. Cl. 208—111 **16 Claims**

1. A process for converting a hydrocarbon charge under hydrocarbon conversion conditions by passing said hydrocarbon charge over crystalline aluminosilicate zeolite particles having an aluminum-free outer shell of SiO_2, said outer shell having the same crystal structure as said zeolite.

4,148,714

METALS PASSIVATION WITH CATALYST FINES

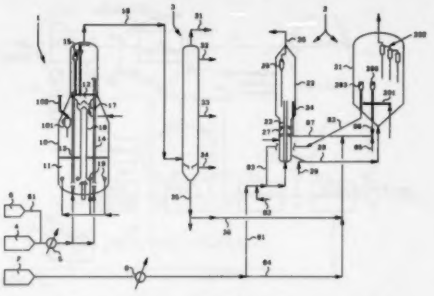
Richard H. Nielsen; Dwight L. McKay, and Glenn H. Dale, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 773,234, Mar. 1, 1977, abandoned. This application Jun. 30, 1978, Ser. No. 920,885

Int. Cl.[2] C10G *11/06*; B01J *8/24*

U.S. Cl. 208—114 **9 Claims**

1. A process for passivating metals in a catalytic cracking process that is carried out essentially in the absence of added hydrogen by contacting a metals containing hydrocarbon feedstock under cracking conditions with a cracking catalyst in



the presence of an added passivating agent consisting essentially of used antimony-containing cracking catalyst fines.

4,148,715

HYDROCARBON CONVERSION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 13, 1978, Ser. No. 886,329

Int. Cl.[2] C10G *35/08*

U.S. Cl. 208—139 **24 Claims**

1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon at hydrocarbon conversion conditions with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt.% platinum group metal, about 0.05 to about 5 wt.% nickel, about 0.01 to about 5 wt.% lanthanide series metal, and about 0.1 to about 3.5 wt.% halogen; wherein the platinum group metal, catalytically available nickel, and lanthanide series metal are uniformly dispersed throughout the porous carrier material; wherein substantially all of the lanthanide series metal is present in a positive oxidation state; wherein substantially all of the platinum group metal is present in the elemental metallic state; and wherein substantially all of the catalytically available nickel is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon conversion conditions or in a mixture of these states.

4,148,716

PROCESS FOR SEPARATING TAR AND SOLIDS FROM COAL LIQUEFACTION PRODUCTS USING A HALOGENATED ALIPHATIC SOLVENT

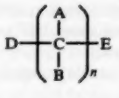
John A. Paraskos, Pittsburgh, Pa., and Edward W. Smith, Houston, Tex., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 21, 1977, Ser. No. 844,455

Int. Cl.[2] C10G *1/04, 29/26*

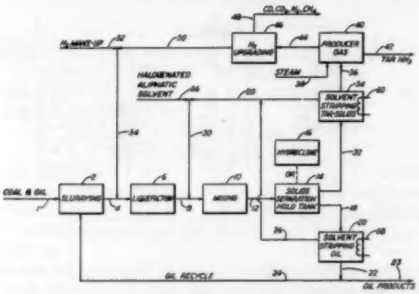
U.S. Cl. 208—177 **14 Claims**

1. A process for separating tar and solid particles from a coal liquefaction product which comprises forming a mixture by blending a coal slurry liquefaction product with a mixed halogen, halogenated aliphatic solvent of the formula:



wherein n is an integer of from about 1 to about 20; and wherein A, B, D and E are either alike or different, members selected from the group consisting of hydrogen, chlorine, bromine or fluorine and mixtures thereof, with the provision

that at least one of said A, B, D or E is chlorine, bromine or fluorine; to form two phases, an upper phase containing said tar



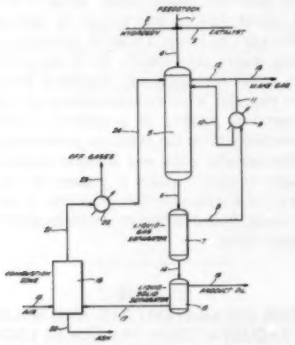
and solid particles and a lower phase containing said solvent and the remainder of said coal liquefaction product.

4,148,717

DEMETALLIZATION OF PETROLEUM FEEDSTOCKS WITH ZINC CHLORIDE AND TITANIUM TETRACHLORIDE CATALYSTS

Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 19, 1977, Ser. No. 826,147
Int. Cl.² C10G *17/00*
U.S. Cl. 208—251 H **9 Claims**



1. A process for removing nickel and vanadium contaminants from a liquid hydrocarbon feedstock containing at least 50 ppmw of nickel plus vanadium contaminants, which process comprises:

(a) contacting said feedstock with a catalyst consisting essentially of one or more halides selected from the class consisting of zinc chloride titanium tetrachloride, and mixtures thereof, said contacting being carried out under conditions of elevated temperature and pressure such that, without substantially altering the physical properties of said feedstock, at least some of said nickel and vanadium contaminants are converted to components insoluble at a temperature between about 100° and 500° F. in the resulting liquid product oil;

(b) separating said insoluble components from said product oil; and

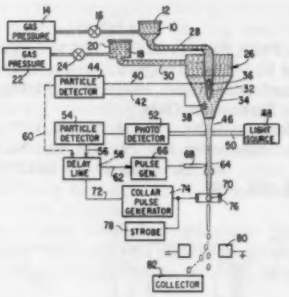
(c) recovering said product oil having essentially the same physical properties as said feedstock and containing vanadium plus nickel in a lower concentration than the concentration of said metals in said feedstock.

4,148,718

SINGLE DROP SEPARATOR

Mack J. Fulwyler, Los Alamos, N. Mex., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation of Ser. No. 694,532, Jun. 10, 1976, abandoned. This application Oct. 19, 1977, Ser. No. 843,696
Int. Cl.² B07C *5/342*
U.S. Cl. 209—3.1 **11 Claims**



1. A method for selectively separating small particles suspended in a fluid including the steps of:

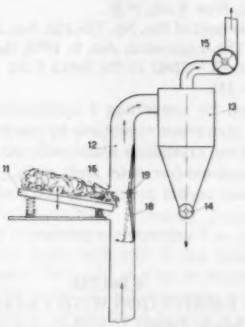
forming a moving fluid stream in air having a substantially constant velocity with said particles asynchronously spaced in said stream, sensing a particle in said moving fluid stream, and applying one of an electrical pulse and a quantum of radiant energy to said stream in air at a particular location when said sensed particle passes through said particular location for asynchonously disturbing said stream and creating a single isolated droplet from said stream surrounding said particle separated from the preceding and succeeding fluid stream.

4,148,719

METHOD FOR SEPARATING URBAN WASTE MATERIALS

Manlio Cerroni, Via Bruxelles 53, Rome, Italy

Continuation of Ser. No. 674,075, Apr. 6, 1976, abandoned. This application Sep. 6, 1977, Ser. No. 830,707
Claims priority, application Italy, Apr. 16, 1975, 49146 A/75
Int. Cl.² B07B *4/02*
U.S. Cl. 209—139 R **1 Claim**



1. A method for separating waste materials, particularly urban solid wastes, comprising the steps of:

introducing said waste material into a generally air-tight vertically extending duct through a waste material inlet intermediate the upper and lower ends of said duct;

producing a vacuum within said duct from a point above said waste material inlet with a level of vacuum sufficient

to cause ambient atmosphere surrounding said duct to flow through said waste material inlet together with said waste material and to entrain said waste material thereby to impart to said entrained waste material a horizontal force sufficient to propel said entrained waste material across said duct and into impingement against a downwardly slanted wall located within said duct directly opposite said waste material inlet;

selecting for said downwardly slanted wall a specific predetermined angle relative to the vertical, said angle being established in accordance with a degree of downward component force to be imparted to said impinging waste material to thereby determine, depending upon said degree of downward component force, portions of said waste material which are to be actively propelled upwardly and downwardly relative to said waste material inlet within said duct; and

locating said downwardly slanted wall means within said duct across from said waste material inlet at said specific predetermined angle thereby to selectively control the separation of said incoming waste material.

4,148,720

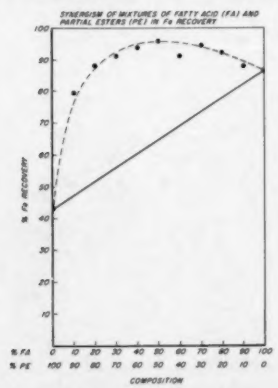
PROCESS FOR BENEFICIATION OF NON-SULFIDE IRON ORES

Samuel S. Wang, New Haven, and Eugene L. Smith, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

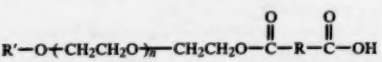
Continuation-in-part of Ser. No. 723,840, Sep. 16, 1976, abandoned, which is a continuation-in-part of Ser. No. 686,629, May 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 650,094, Jan. 19, 1976, abandoned. This application May 3, 1977, Ser. No. 793,460

Int. Cl.[2] B03D *1/02*

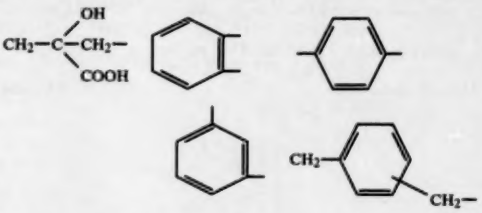
U.S. Cl. 209—166 **10 Claims**



1. A process for the beneficiation of oxidized type iron ores which comprises classifying the ore to provide particles of flotation size, slurrying the sized ore in aqueous medium, conditioning the slurry with an effective amount of a combination of from about 99 to about 5 weight percent of a fatty acid derived from a vegetable or animal oil and, correspondingly, from about 1 to about 95 weight percent of a partial ester of a polycarboxylic acid having at least one free carboxylic acid group, and floating the desired ore values by froth flotation, said partial ester having the structure:



wherein R′ is a primary or secondary alkyl group of about 8 to 18 carbon atoms, n is an integer of about 0–10 and R is a bivalent grouping selected from $(CH_2)_m$ wherein m is an integer of 1 to 6, —CH=CH—, —CHOHCH$_2$—, —CHOHCHOH—,



ortho, meta, and para, and —C_6H_{10}—.

4,148,721

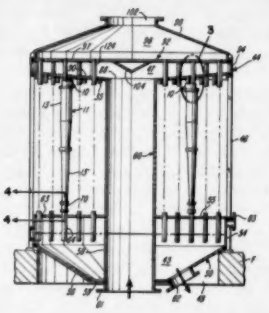
CENTRIFUGAL CLEANER APPARATUS AND CANISTER TYPE ARRANGEMENTS THEREOF

David L. Brown; John Ostborg, and Robert O. Wambsgans, all of Springfield, Ohio, assignors to The Bauer Bros. Co., Springfield, Ohio

Filed May 6, 1977, Ser. No. 794,607

Int. Cl.[2] B04C *5/28*

U.S. Cl. 209—211 **28 Claims**



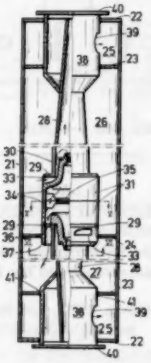
1. Apparatus for application to a tubular shell to form therewith a centrifugal separating chamber comprising a body for insertion in one end of the shell, a peripheral surface portion of said body being formed for a bearing fit with an inner wall surface portion of the shell, one end surface portion of said body being adapted to position inwardly of the shell to form one end of the separating chamber and the opposite end surface portion of said body being arranged thereby to face outwardly of the shell, said body being formed to provide therein means defining a flow path including a flow restricting inlet in said opposite end surface portion thereof arranged to open outwardly therefrom in a sense axially of said body, said inlet and the opening therefrom being offset from the central longitudinal axis of said body and located to lie within the limits of the shell to which said body is applied and arranged to be generally parallel to said longitudinal axis, said flow restricting inlet being continued inwardly of said body by means arranged to define a flow restricting passage forming part of said flow path, said passage having one end communicating with said inlet and the other end communicating with said one end surface portion of said body, the arrangement enabling an introduction of a slurry, the contents of which are to be separated, to said flow path, in a sense axially of said body, and said passage being constructed and arranged to direct slurry from said inlet to move about and axially of said body in a controlled fashion and in exit from said passage to move over said one end surface portion of said body.

4,148,722

MULTIPLE HYDROCYCLONE ARRANGEMENT

Jorma Surakka, and Matti Lankinen, both of Savonlinna, Finland, assignors to Enso-Gutzeit Osakeyhtio, Helsinki, Finland

Filed Oct. 26, 1977, Ser. No. 845,663
Claims priority, application Finland, Nov. 1, 1976, 763102
Int. Cl.[2] B04C 5/28
U.S. Cl. 209—211 2 Claims



1. A hydrocyclone assembly for the separation of a liquid suspension into accept fractions and reject fractions comprising: at least one pair of generally similar hydrocyclones each having a longitudinal axis and including accept ends, said pair of hydrocyclones being arranged in generally longitudinal alignment end-to-end with their accept ends adjacent each other, each of said hydrocyclones having a joint feed chamber and a joint accept chamber wherein the combined accept fractions from said pair of hydrocyclones accumulate; accept tubes in each of said hydrocyclones, said accept tubes having ends directed against each other; one of said accept tubes of said pair of hydrocyclones including an outer surface; the other of said accept tubes having an expanded cylindrical part with an inner surface concentric with said outer surface; an annular flange accommodated between said outer surface and said inner surface of said expanded cylindrical part; and means defining apertures located in said annular flange for conducting the accept fractions from said accept tubes into said accept chamber.

4,148,723

CYCLONE SEPARATOR

Richard H. Mozley, Falmouth, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 762,515, Jan. 26, 1977, abandoned. This application Mar. 16, 1978, Ser. No. 887,047
Claims priority, application United Kingdom, Jan. 28, 1976, 03300/76
Int. Cl.[2] B04C 5/28
U.S. Cl. 209—211 5 Claims

1. In a cyclone separator having a vortex finder and an apex, and at least one orifice subject to blockage,

the improvement comprising:

an outside-parked operative clearing member in the form of an elongated pusher rod, arranged for insertion through the vortex finder and thence through the apex; and

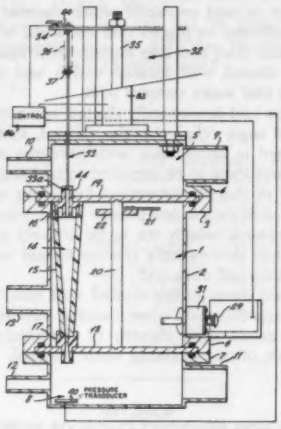
means for temporarily inserting said clearing member into said at least one orifice for clearing said at least one orifice of blockage, thereby conducting a clearing operation;

said at least one orifice includes means defining an apex outlet of said cyclone separator;

the improvement further comprising:

a blockage sensor for detecting blockage of said apex outlet; and

control means provided as part of said temporarily inserting means and connecting the blockage sensor with the clearing member, for initiating a said clearing operation upon detection by said blockage sensor of a said blockage;



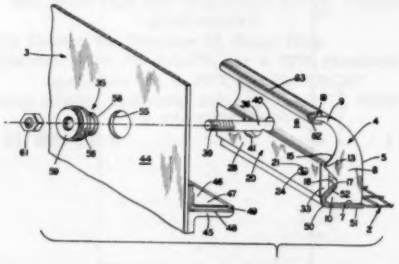
further control means provided as part of said temporarily inserting means, for automatically initiating a said clearing operation each time a preselected amount of time has elapsed.

4,148,724

WEDGE-TYPE TENSIONING RAIL CONSTRUCTION FOR ELECTRICALLY HEATED SCREENS

Thomas W. Hannon, Louisville, Ohio, assignor to Hannon Electric Company, Canton, Ohio

Filed Dec. 13, 1977, Ser. No. 860,244
Int. Cl.[2] B07B 1/49
U.S. Cl. 209—403 17 Claims



1. Rail construction for mounting and tensioning an electrically heated screen between a pair of spaced, longitudinally extending frame members including:

(a) a metal rail member having outer, bottom and inner surfaces;

(b) the rail member inner surface having longitudinally extending wedge-shaped channel means formed therein, said channel means having an angled surface extending acutely from the bottom surface upwardly towards the outer surface to form with the rail member bottom surface an acutely angled flange hook-shaped in cross section;

(c) bar means wedge-shaped in cross section having an angled surface generally complementary to the channel means acutely angled surface;

(d) bolt means movably mounting the bar means on the rail member, the bar means when so mounted being located in a position adjacent to and extending along the channel means to clamp a hook-shaped end formed along a longitudinal edge of a screen in the channel means between the

acutely angled surface of the channel means and the complementary angled surface of the bar means when the hook-shaped screen end is engaged over the hook-shaped flange of the rail member;

(e) adjustable tensioning means extending between and engaging one of the frame members and the rail member operative to move the rail member toward the frame member to tension the screen; and

(f) insulation means between the rail and frame members for electrically insulating the rail member and screen from the frame member.

4,148,725

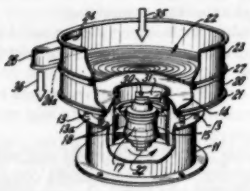
PROCESS AND APPARATUS FOR SEPARATING PARTICLES BY RELATIVE DENSITY

William J. Haight, 5 Ridgeview Dr., Pleasantville, N.Y. 10570

Continuation-in-part of Ser. No. 663,247, Mar. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 552,704, Feb. 24, 1975, abandoned. This application Nov. 25, 1977, Ser. No. 854,950

Int. Cl.[2] B07B *13/00*

U.S. Cl. 209—481 **57 Claims**



1. A process for separating particles of selected relative density from an aggregated mass of particles of selected size having different densities, comprising the steps of:

disposing the aggregated mass of particles upon a supporting surface to form a particle bed;

agitating the supporting surface with a gyratory motion having a circularly eccentric motion component and an oscillatory vertical component sufficient to fluidize said bed and thereby substantially reduce the resistance of the particle bed to translational movement of particles therewithin;

contacting the particles in said bed with vertical reaction surfaces movable with the supporting surface and defining at least two annular regions within the bed, one of said regions forming a zone for the retention of particles of relatively greater density said supporting and reaction surfaces providing areas of contact with said bed sufficient to impart to the particles forces causing them to move in paths having a net radial direction component;

providing a restricted area of communication through at least one vertical reaction surface between adjacent annular regions so as to permit particles in said fluidized bed to move across at least a portion of the boundary between said annular regions, whereby particles of greater relative density move through said restricted area of communication into one of said annular regions for collection, particles of less relative density being displaceable from said collection region into an adjacent annular region.

4,148,726

PROCESS FOR TREATMENT OF SEWAGE IN A GRAVITY SEWER

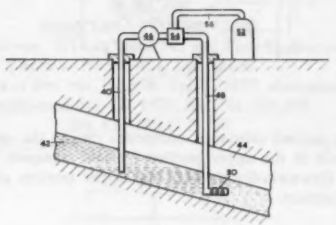
Kenneth C. Smith, Lunga House, Epping Rd., Roydon, Essex, England

Division of Ser. No. 429,744, Jan. 2, 1974, abandoned. This application Jun. 22, 1976, Ser. No. 698,757

Claims priority, application United Kingdom, Jan. 8, 1973, 1028/73; Mar. 1, 1973, 10080/73

Int. Cl.[2] C02C *1/12*

U.S. Cl. 210—9 **2 Claims**



1. In a process of treating sewage while it is flowing through a gravity sewer, in which pure oxygen or an oxygen-rich gas is introduced into the sewage, the improvement comprising pressurizing a stream of sewage comprising a portion of sewage withdrawn from the sewer in an amount of 0.5 to 10% of the flow of sewage in the sewer, introducing pure oxygen or oxygen-rich gas into the withdrawn pressurized portion in a minimum quantity required to prevent the concentration of dissolved oxygen in the sewage to be treated from falling to a level at which bacterial reduction of oxygen and sulfur containing compounds in the sewage would start, which pressurized stream is then injected under pressure of 1.5 to 10 bars into the sewage in the sewer at a point downstream of the withdrawal of said portion, the amount of oxygen or oxygen-rich gas being such that it is substantially all dissolved in the sewage without significant accumulation of free oxygen in any headspace in the sewer, whereby bacterial formation of hydrogen sulfide is prevented and any of the hydrogen sulfide dissolved in the sewage is oxidized to sulfur generally without creation of a potentially explosive atmosphere in any headspace in the sewer.

4,148,727

METHOD OF DECONTAMINATING LIQUIDS

Kurt Marquardt, Holzgerlingen, Fed. Rep. of Germany, assignor to Haeger & Elsaesser, Stuttgart-Vaihingen, Fed. Rep. of Germany

Filed Aug. 18, 1975, Ser. No. 605,599

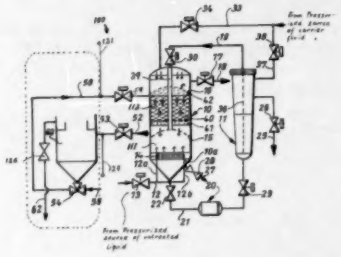
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1974, 2439303

Int. Cl.[2] B01D *15/06*

U.S. Cl. 210—33 **1 Claim**

1. In a method of separating impurities from an untreated liquid, comprising the steps of respectively charging first and second chambers with first and second contaminant-removing substances, propelling the untreated liquid through the first and second chambers in tandem, withdrawing purified liquid from the second chamber, the improvement wherein the propelling step is accomplished by passing the liquid upwardly through vertically superposed, upper and lower portions of a common treatment tank, the upper and lower portions being separated by a liquid-permeable element, said lower portion defining the first chamber and said upper portion defining the second chamber, and wherein the step of charging the first chamber comprises removing a spent first substance from the lower portion of the treatment tank with a transport liquid, externally renewing the spent first substance and recirculating the renewed first substance to the lower portion, and the step

of charging the second chamber comprises renewing the spent second substance in situ, said second substance being of the type which may be renewed by rinsing, and the step of renewing the second substance comprises rinsing the spent second substance in the upper portion by said transport liquid propelled downwardly through the upper portion and into the lower portion.

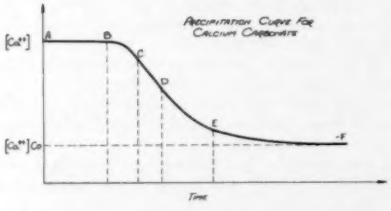


4,148,728

SCALE-INHIBITING COMPOSITIONS FOR AQUEOUS SOLUTIONS

Henri Roques, Portet sur Garonne, and André Girou, Lanta, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

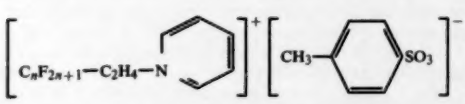
Filed Nov. 22, 1976, Ser. No. 743,619
Claims priority, application France, Nov. 25, 1975, 75 35932
Int. Cl.[2] C02B *5/06*
U.S. Cl. 210—58 **32 Claims**



1. A process for the inhibition of scale formation on surfaces exposed to aqueous solutions which process comprises contacting the surfaces with a solution of at least one fluorocarbon derivative capable of affixing itself to the surfaces in a solvent, wherein the fluorocarbon is $C_nF_{2n+1}—C_2H_4—N—(C_2H_4OH)_2$, and n is an integer from 2 to 20.

9. A process for the inhibition of scale formation on surfaces exposed to aqueous solutions which process comprises contacting the surfaces with a solution of at least one fluorocarbon derivative capable of affixing itself to the surfaces in a solvent, wherein the fluorocarbon is $C_nF_{2n+1}—C_2H_4—SO_2—NH(CH_2)_3N(CH_3)_2$, and n is an integer from 2 to 20.

17. A process for the inhibition of scale formation on surfaces exposed to aqueous solutions which process comprises contacting the surfaces with a solution of at least one fluorocarbon derivative capable of affixing itself to the surfaces in a solvent, wherein the fluorocarbon is



and n is an integer from 2 to 20.

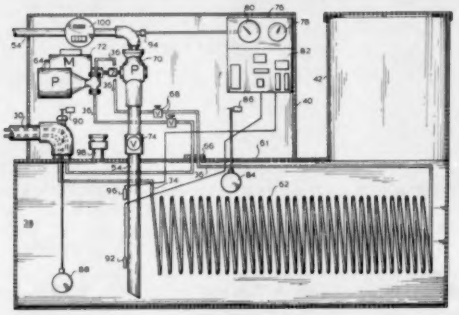
25. A process for the inhibition of scale formation on surfaces exposed to aqueous solutions which process comprises contacting the surfaces with a solution of at least one fluorocarbon derivative capable of affixing itself to the surfaces in a solvent, wherein the fluorocarbon is $(C_nF_{2n+1}—C_2H_4S)_2$, and n is an integer from 2 to 20.

4,148,729

SYSTEM FOR STORING AND HANDLING USED COOKING OILS

George A. Howard, P.O. Box 1676, Melbourne, Fla. 32901

Filed Aug. 25, 1976, Ser. No. 717,472
Int. Cl.[2] B01D *35/02*
U.S. Cl. 210—104 **7 Claims**



1. Apparatus for storing used cooking oils in a restaurant facility of the type having a kitchen area where said cooking oils are used, said apparatus comprising:

a storage container located away from said kitchen area;

a used oil dump receptacle with a screen inlet located in said kitchen area;

a heated pipe coupling said dump receptacle to said storage container such that oil dumped into said receptacle flows into said storage container;

means for heating said oil while in said pipe and while in said storage container, said heating means comprising:

a heating tube having a diameter substantially less than said pipe, said heating tube extending through said pipe;

a return tube extending through said pipe;

a coil extending through said storage container and coupled between said heating tube and said return tube;

means for circulating a fluid through said heating tube, said coil and said return tube; and

means coupled between said heating tube and said return tube for heating said fluid;

means for pumping said oil through an outlet of said storage container;

indicating means for sensing when said storage container is full of oil; and

a switch outside of said storage container for energizing said pumping means.

4,148,730

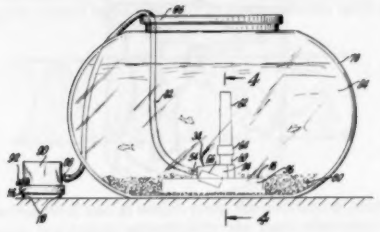
UNDERGRAVEL AQUARIUM FILTER

Allan H. Willinger, New York, N.Y., assignor to Willinger Bros., Inc., New York, N.Y.

Filed May 3, 1977, Ser. No. 793,252
Int. Cl.[2] E04H *3/20*
U.S. Cl. 210—169 **14 Claims**

1. An undergravel aquarium filter for an aquarium tank having a gravel bed therein, said filter comprising, in combination, a housing assembly positionable on a bottom floor of the tank beneath the gravel bed for providing a water compartment, inlet means provided in said housing assembly through which water from the tank can flow into the water compartment, an enclosure extending upwardly from said housing

assembly to provide therein a mixing chamber, said mixing chamber being in fluid flow communication with said water compartment, outlet means associated with said enclosure for permitting an egress of air and water from said mixing chamber, air stream supply means disposed in said enclosure for directing air into said water compartment to draw water from the tank into the waer compartment through said inlet means after passing through the gravel bed and for the egress of the air and water through said outlet means, said housing assembly including an inner section having a basewall and downwardly depending sidewalls to define therein a main water compartment, and a separable outer section surrounding said inner



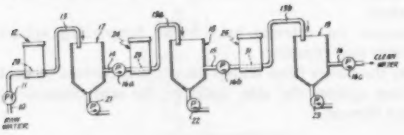
section and having a basewall and downwardly depending inner and outer sidewalls to define therein a secondary water compartment, an inwardly directed lip on said inner sidewall for supporting said sidewalls of said inner section to position the basewalls of said inner and outer sections in a substantially coextensive plane, said inlet means including aperture provided in the basewalls of said inner and outer sections, said inner sidewall of said outer section being shorter than said outer sidewall thereof, a lower peripheral edge of said outer sidewall being disposable on tank floor with said main and secondary water compartments being in fluid flow communication with each other.

4,148,731

MULTI-STAGE APPARATUS FOR THE SEPARATION OF FINELY DIVIDED SOLIDS FROM LIQUIDS

Miguel F. Brigante, 4395 E. Tenth La., Hialeah, Fla. 33013

Filed Dec. 27, 1977, Ser. No. 864,810
Int. Cl.[2] B03C *1/30*
U.S. Cl. 210—223 **2 Claims**



1. In an apparatus for separating finely divided solid particles suspended in water, the combination of:

a plurality of fluidly interconnected settlement tanks each having an inlet for raw water and an outlet for treated water, each tank having a conical bottom and an extractor means adjacent the conical bottom of said tank for withdrawing gravity settled material therefrom and leaving a supernatant liquid in a supernatant zone above a bottom settlement zone;

a circulating pump, including conduit means fluidly connected to a filter pre-treating unit for passing raw water therethrough;

a filter pre-treating unit fluidly connected to the inlet of each tank comprising a pre-treatment conduit, an electromagnetic aluminum wire winding fed by 24 ± 4 volts DC surrounding said conduit and extending therethrough, a step-down transformer for 110 to 220 volts, a DC rectifier and a casing for the conduit and unit;

said conduit containing a helical screw impeller rotatably mounted therein which has about 2½ turns spaced at about 1/16 inch from the inner wall of said conduit which rotates responsive to water flow in said conduit; and

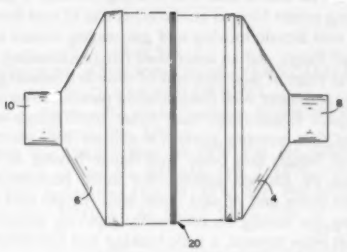
said helical screw impeller having its first turn starting close to the inner wall of said conduit and inducing therein a magnetic field by its rotation under the influence of said electromagnetic winding surrounding said conduit for inducing a magnetic field providing a positive sweeping action to the suspended particles in the supernatant liquid above the bottom settlement zone of each tank.

4,148,732

BACTERIA FILTER UNIT

Clovis E. Burrow, 8715 E. 146st St., and Flois D. Burrow, Rte. 4, Box 272, both of Noblesville, Ind. 46060

Continuation of Ser. No. 784,679, Apr. 5, 1977, abandoned. This application Jul. 13, 1978, Ser. No. 924,194
Int. Cl.[2] B01D *25/04*
U.S. Cl. 210—232 **3 Claims**



1. A bacteria filter unit comprising in combination a first housing portion and a second housing portion, a filter media adapted to be interposed between said first and second housing portions in sealed relationship therewith, a female locking and gas sealing means formed around the periphery of one end of said first housing portion, a gas conduit connecting means formed on the other end of said first housing portion, said female locking and gas sealing means having an outer wall flange and an inner wall flange extending from the peripheral edge of said one end of said first housing portion, said inner and outer wall flanges being parallel to each other in spaced-apart relationship, said outer wall flange extending from said first housing portion a greater distance than said inner wall flange, said outer wall flange having an inwardly projecting lip formed around the inner periphery thereof above the outer end of said inner wall flange, a male locking and gas sealing means formed around the periphery of one end of said second housing portion, a gas conduit connecting means formed on the other end of said second housing portion, said male locking and gas sealing means comprising a shouldered flange extending from the peripheral edge of said one end of said second housing portion in parallel relationship with the inner and outer wall flanges of said female locking and gas sealing means, said shouldered flange of said male locking and gas sealing means having a first stepped shoulder formed around the inner periphery thereof, the dimension from the end surface of said flange to said inner stepped shoulder of said male locking and gas sealing means generally corresponding to the height of said inner wall of said female locking and gas sealing means, and a second shoulder formed on the outer periphery of said flange of said male locking and gas sealing means, the dimension from the end surface of said flange to said outer shoulder thereon corresponding to the dimension from the bottom of the groove between the inner and outer walls of said female locking and gas sealing means to the lip formed on the inner surface of said outer wall of said female locking and gas sealing means, said filter media having a peripheral dimension corresponding generally to the peripheral dimension of the inner surface of

the outer wall flange of said female locking and gas sealing means, whereby, upon engagement of said flange of said male locking and gas sealing means within the groove between said inner and outer wall flanges of said female locking and gas sealing means, said filter media is retained between the end surface of said inner wall of said female locking and gas sealing means and said inner stepped shoulder of said flange of said male locking and gas sealing means and is tensioned by the movement of said shouldered flange of said male locking and gas sealing means into the space between the inner and outer wall flanges of said female locking and gas sealing means and said first housing portion and said second housing portion are locked together in sealing relationship with each other by the engagement of said male locking and gas sealing means within said female locking and gas sealing means.

3. A bacteria filter unit comprising in combination a first housing portion and a second housing portion, a filter media adapted to be interposed and locked between said first and second housing portions in sealed relationship therewith, a female locking and gas sealing means formed around the periphery of one end of said first housing portion, a gas conduit connecting means formed on the other end of said first housing portion, said female locking and gas sealing means having an outer wall flange and an inner wall flange extending from the peripheral edge of said one end of said first housing portion, said inner and outer wall flanges being parallel to each other in spaced-apart relationship, said outer wall flange extending from said first housing portion a greater distance than said inner wall flange, said outer wall flange having an inwardly projecting lip formed around the inner periphery thereof above the outer end of said inner wall flange, said inwardly projecting lip having an outwardly tapering surface on the outermost edge thereof, a male locking and gas sealing means formed around the periphery of one end of said second housing portion, a gas conduit connecting means formed on the other end of said second housing portion, said male locking and gas sealing means comprising a shouldered flange extending from the peripheral edge of said one end of said second housing portion in parallel relationship with the inner and outer wall flanges of said female locking and gas sealing means, said shouldered flange of said male locking and gas sealing means having a first stepped shoulder formed around the inner periphery thereof and a second shoulder formed on the outer periphery thereof, the distance between said inner stepped shoulder and said outer stepped shoulder on the flange of said male locking and gas sealing means plus the thickness of said filter media being greater than the distance between the end surface of said inner wall flange and the inwardly projecting lip formed on the inner periphery of said outer wall flange of said female locking and gas sealing means to provide a combined lock and seal upon engagement of the shouldered flange of said male locking and gas sealing means within the groove between the inner and outer wall flanges of said female locking and gas sealing means, the outer surface of said shouldered flange of said male locking and gas sealing means being tapered inwardly from the outer stepped shoulder thereon, the outside diameter of the outermost end of the flange of said male locking and gas sealing means plus the thickness of said filter media being equal to the inside diameter of the outer wall flange of said female locking and gas sealing means, the inside diameter of said shouldered flange of said male locking and gas sealing means being equal to the outside diameter of said inner wall flange of said female locking and gas sealing means, whereby, upon engagement of said shouldered flange of said male locking and gas sealing means within the groove between said inner and outer walls of said female locking and gas sealing means, said filter media is tensioned across the end surface of said inner wall of said female locking and gas sealing means and is bent at right angles and compressed between the inner wall flange of said female locking and gas sealing means and the shouldered flange and first stepped shoulder of said male locking and gas sealing means to lock said first and second housing portions together and provide a gas seal around the periphery of said filter media between said first and second housing portions.

4,148,733

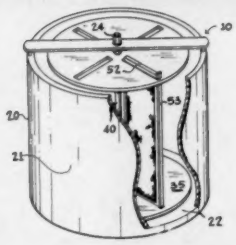
FRAME SUPPORTING MECHANISM FOR CENTRIFUGAL HONEY EXTRACTORS

Banks R. Gamble, 2602 S. Holden Rd., Greensboro, N.C. 27407

Filed Feb. 21, 1978, Ser. No. 879,199

Int. Cl.[2] B01D *17/00*

U.S. Cl. 210—361 **3 Claims**



1. A centrifugal honey extractor commprising:

(a) a honeycomb frame having an extension means on at least one end of the top bar thereof,

(b) a container having adjoining side and bottom walls;

(c) a comb frame supporting apparatus removably and rotatably mounted within said container and including:

(i) a supporting shaft;

(ii) a first retaining plate mounted on the lower end of said shaft having a plurality of apertures arcuately spaced around said shaft through the surfaces of said plate, said apertures being of a dimension and shape such as to receive and retain therein said extension means;

(iii) a second retaining plate mounted on the upper end of said shaft having a plurality of radially extending, arcuately spaced slots extending through the surfaces thereof in positions in which at least a portion of each of said slots overlies one of said apertures below, said slots being of a dimension and shape such that the comb frame is inserted vertically therethrough to a position whereby said extension means is securely seated within one of said apertures and the opposite end bar of said frame is retained within the corresponding one of said slots;

(d) means for rotating said frame supporting apparatus within said container

whereby the honey from within the comb is thrown by centrifugal force against the side walls of the said container and collected therein.

4,148,734

FILTER MATERIAL AND PROCESS FOR PRODUCING SAME

Karl H. Hilterhaus, Geörgsmarienhütte, Oesede, and Franz G. Reuter, Lemforde, both of Fed. Rep. of Germany, assignors to Chemie-Anlagenbau Bischofsheim GmbH, Osnabruck and Reuter Technologie GmbH, Lemforde, both of, Fed. Rep. of Germany

Continuation of Ser. No. 640,333, Dec. 12, 1975, abandoned. This application Aug. 15, 1977, Ser. No. 824,696

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1974, 2460764

Int. Cl.[2] C08J *3/10, 3/20, 5/04, 7/00*

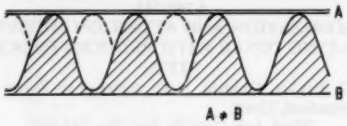
U.S. Cl. 264—48 **9 Claims**

1. A process of producing a porous polyurethane resin filter material comprising:

a. providing a first solution containing 60 tp 80% by weight of an NCO-pre-adduct having 1.5 to 5% free isocyanate groups dissolved in a highly polar organic solvent;

b. providing a second solution containing a highly polar organic solvent and at least one member selected from the group consisting of hydrazine hydrate, carbodihydrazide, piperazine and 1,4-diaminopiperazine and in which solution said member is present in an amount of from 0.02 to 0.05 mole percent;

c. admixing said first solution into said second solution over an extended period of time during which the NCO pre-adduct and said member of said second solution react to form a highly viscous reaction product and continuing the admixing of said first solution into said second solution and monitoring the viscosity measured under reaction conditions until the viscosity of the admixture is such that the addition of even the minutest amount of said first solution would have resulted in instantaneous gelling of



the admixture, and at which point the addition of said first solution is stopped immediately, the final admixture thus produced having a solids content of between 15 and 35% by weight;

d. shaping the resulting high viscosity final solution into a sheet,

e. introducing the sheet into a coagulating bath to provide a microporous sheet structure having two external non-porous skin stratum and a central stratum having pore channels aligned perpendicularly to the surfaces of the sheet structure,

f. drying the resulting microporous sheet structure and

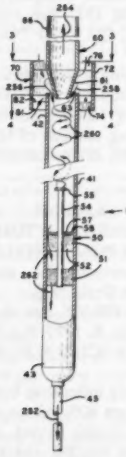
g. abrading one or both sides of the resulting microporous sheet structure to provide a filter having pore channels perpendicular to the surfaces of the sheet structure.

4,148,735

SEPARATOR FOR USE IN BOREHOLES OF LIMITED DIAMETER

Claude C. Laval, Jr., 2444 N. Farris Ave., Fresno, Calif. 93705

Filed Aug. 3, 1978, Ser. No. 930,681
Int. Cl.[2] B01D *21/26*
U.S. Cl. 210—512 R **10 Claims**



1. A separator for use in boreholes of limited diameter containing fluid with particulate matter therein comprising:

(A) a vortex chamber having an inwardly disposed surface of revolution concentric to an axis and upper and lower end portions;

(B) a vortex finder extended concentrically in the upper end of the vortex chamber and therebetween defining an annular throat; and

(C) a swirling chamber interconnecting the upper end portion of the vortex chamber and the vortex finder having an inwardly disposed surface of revolution concentrically about the axis, the swirling chamber having an annular portion circumscribing the vortexing chamber and outwardly extended therefrom having an inlet therethrough facing downwardly exteriorly of the vortexing chamber to receive fluid upwardly therein disposed tangentially to a circle concentric to the axis to impart a swirling action to fluid admitted to the swirling chamber, and communicating through the swirling chamber and the throat with the vortexing chamber to swirl the fluid therein to centrifuge particulate matter from the fluid for descent in the vortexing chamber and return flow of the fluid out of the vortex finder.

4,148,736

OIL RECOVERY PROCESS USING VISCOSIFIED SURFACTANT SOLUTIONS

John J. Meister, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 728,377, Sep. 30, 1976, Pat. No. 4,071,457, which is a division of Ser. No. 654,435, Feb. 2, 1976, Pat. No. 4,007,792. This application Oct. 31, 1977, Ser. No. 847,346
Int. Cl.[2] E21B *43/22, 43/25;* **C09K** *7/02*
U.S. Cl. 252—8.55 R **14 Claims**

1. A thixotropic composition of matter consisting essentially of a mixture of:

(a) a fluid consisting essentially of

(1) 10–90 weight percent of water,

(2) 90–10 weight percent of chloroform,

(b) 1–5,000 ppm of a cationic surfactant,

(c) 1–5,000 ppm of an anionic surfactant,

(d) 50–20,000 ppm acid in a quantity sufficient to reach a pH of $\leqq$4.5 in the aqueous phase, and

(e) 50–20,000 ppm alkali metal buffer salt in mol ratio of buffer salt to acid component (d) in the range of 0.1:1 to 5:1;

the ppm values being based on the combined weight of water and chloroform.

4,148,737

ANTIOXIDANT ADDITIVE COMPOSITION AND LUBRICATING OIL CONTAINING SAME

Thomas V. Liston, San Rafael, and Warren Lowe, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 31, 1978, Ser. No. 892,444
Int. Cl.[2] C10M *1/48*
U.S. Cl. 252—32.7 E **12 Claims**

1. An additive composition for use in crankcase lubricating oils comprising:

(1) an oil-soluble antioxidant selected from aromatic or alkyl sulfides and polysulfides, sulfurized olefins, sulfurized carboxylic acid esters, and sulfurized ester-olefins, and

(2) an oil-soluble brominated hydrocarbon containing at least 3 carbon atoms wherein the weight ratio of said antioxidant to said brominated hydrocarbon is 1:0.001-21.

2. The composition of claim 1 comprising an oil of lubricating viscosity, from 0.25 to 10% weight of said antioxidant and from 0.001 to 5% weight of said brominated hydrocarbons.

4,148,738

ANTIOXIDANT ADDITIVE COMPOSITION AND LUBRICATING OIL CONTAINING SAME

Thomas V. Liston, San Rafael, and Warren Lowe, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 31, 1978, Ser. No. 892,443
Int. Cl.[2] C10M *1/48*
U.S. Cl. 252—32.7 E 14 Claims

1. An additive composition for use in crankcase lubricating oils comprising:
   (1) an oil-soluble antioxidant selected from aromatic or alkyl sulfides and polysulfides, sulfurized olefins, sulfurized carboxylic acid esters, and sulfurized ester-olefins, and
   (2) an oil-soluble quaternary ammonium halide wherein the weight ratio of antioxidant to quaternary ammonium halide is in the range of from 1 to 0.001–21.

2. The composition of claim 1 comprising an oil of lubricating viscosity, from 0.25 to 10% weight of said antioxidant and from 0.001 to 5% weight of said quaternary ammonium halide.

4,148,739

ANTIOXIDANT ADDITIVE COMPOSITION AND LUBRICATING OIL CONTAINING SAME

Thomas V. Liston, San Rafael, and Warren Lowe, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 31, 1978, Ser. No. 892,445
Int. Cl.[2] C10M *1/48*
U.S. Cl. 252—32.7 E 10 Claims

1. An additive composition for use in crankcase lubricating oils comprising:
   (1) an oil-soluble antioxidant selected from aromatic or alkyl sulfides and polysulfides, sulfurized olefins, sulfurized carboxylic acid esters, and sulfurized ester-olefins, and
   (2) an oil-soluble iodo-containing hydrocarbon wherein the weight ratio of said antioxidant to said iodo-containing hydrocarbon is 1:0.001–21.

2. The composition of claim 1 comprising an oil of lubricating viscosity, from 0.25 to 10% weight of said antioxidant and from 0.001 to 5% weight of said iodo-containing hydrocarbon.

4,148,740

PREPARATION OF OVERBASED MAGNESIUM SULFONATES

Vincent J. Cease, Media, Pa., and George R. Kirk, Newark, Del., assignors to Witco Chemical Corporation, New York, N.Y.

Filed May 1, 1978, Ser. No. 901,877
Int. Cl.[2] C10M *1/40, 3/34, 5/22, 7/38*
U.S. Cl. 252—33.2 28 Claims

1. In a process for preparing a stable fluid highly-basic, magnesium-containing colloidal dispersion, which includes the steps of:
(a) forming a fluid admixture of:
   (1) an acidic oil-soluble dispersing agent selected from the group consisting of oil-soluble sulfonic acids, and mixtures of oil-soluble sulfonic acids and oil-soluble aliphatic hydrocarbon monocarboxylic acids;
   (2) a volatile organic solvent selected from the group of hydrocarbon and chlorinated hydrocarbon solvents having a boiling point below about 300° F.; and
   (3) a minor proportion of an alcohol selected from the group of C_1 to C_6 aliphatic alcohols, alkoxy ethanols containing 3 to 7 carbon atoms, and C_1 to C_6 alkyl mono-ethers of lower glycols;
(b) adding to said admixture of step (a), under conditions of agitation, an amount of activated magnesium oxide initially sufficient to neutralize the acidic dispersing agent and additionally to provide an overbasing amount of the activated magnesium oxide;
(c) treating the reaction mixture of step (b) with 75% (±10%) of the stoichiometric quantity of carbon dioxide per mole of overbasing magnesium present by the gradual addition of said carbon dioxide while maintaining the reaction mixture at a temperature in the range of about 70 to about 125° F.;
(d) during the early and through a partially continued stage of the carbonation of step (c) adding to the reaction mixture an activator in the form of ammonia or an ammonium compound;
(e) after the carbonation step has been essentially completed, adding a non-volatile diluent oil having a boiling point above about 320° F.; and
(f) bringing the reaction mixture from step (e) to a temperature not exceeding about 100° F. whereby stabilization of the resulting colloidal dispersion is effected for a period of time within the range of at least about 24 hours.

4,148,741

POLYMERIZATION AND ATTRITION METHOD FOR PRODUCING TONER WITH REDUCED PROCESSING STEPS

Robert D. Bayley, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1976, Ser. No. 711,005
Int. Cl.[2] G03G *9/08*
U.S. Cl. 252—62.1 P 21 Claims

1. A method of toner formation comprising agitating an aqueous mixture of a pigment and a reactive material to form a coating on the pigment to clad the pigment, wherein said pigment is insoluble in water and capable of being dispersed in a monomer, dispersion of the cladded pigment in monomer, wherein said monomer is capable of being polymerized into a polymeric material by dispersion polymerization and said polymeric material has a melting point within the range suitable for use as a toner, agitation of the monomer containing pigment in water to form droplets in suspension, said droplets having a size of from about 200 to about 600 microns, agitation of said monomer during polymerization to form particles having a size of from 200 to 600 microns, washing and drying the particles and reducing the particle size thereof to 5 to 30 microns by attrition to form toner.

4,148,742

DETERGENT COMPOSITION CONTAINING ALKALI METAL SALTS OF IMIDOBIS SULFURIC ACID

Marvin M. Crutchfield, St. Louis County; Robert P. Langguth, Overland, and James M. Mayer, Maryland Heights, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 30, 1977, Ser. No. 838,279
Int. Cl.[2] C11D *7/60*
U.S. Cl. 252—102 7 Claims

1. A process for washing soiled fabrics comprising contacting the fabrics with an aqueous detergent composition which includes a surfactant, a halogen-containing bleach, and a bleach damage mitigating amount of trisodium imidobis sulfate, tripotassium imidobis sulfate or mixtures thereof.

4,148,743

PROCESS FOR MAKING A TOILET SOAP BAR CONTAINING POLYETHYLENE OXIDE

Warren R. Schubert, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 693,076, Jun. 4, 1976, abandoned. This application Dec. 6, 1977, Ser. No. 858,044
Int. Cl.[2] C11D *9/26, 9/40*
U.S. Cl. 252—132 7 Claims

1. Process for preparing toilet soap bars containing, approximately by weight, at least 60% of soap and between 0.5 and 10% of poly (ethylen oxide) having an average molecular weight of at least about 100,000 which comprises forming a first mixture of said sopa is in the form of chips and said poly (ethylene oxide) in the form of powder, said first mixture containing at least about 11% of moisture by weight of said chips whereby the surfaces of said soap chips are in powder-

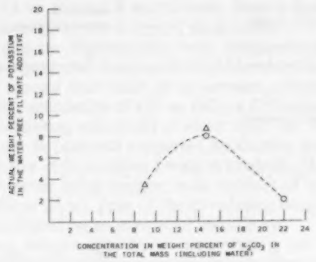
adherent condition with respect to said poly (ethylene oxide) powder, to produce soap chips having poly (ethylene oxide) bonded thereto, then mixing other conventional soap bar ingredients with said bonded chips to form a second mixture, then forming said second mixture into a soap bar.

4,148,744

CARBON BLACK PRODUCTION

Harold R. Hunt, and King L. Mills, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 31, 1977, Ser. No. 783,242
Int. Cl.[2] C09C 1/48
U.S. Cl. 252—182 **9 Claims**



1. A process for producing a carbon black reaction additive useful for controlling the structure of carbon black which comprises:

mixing a water solution of an alkali metal inorganic salt with oil and a suitable emulsifying agent at conditions which allow formation of an emulsion wherein said oil has an SUS viscosity at 100° F. (37.8° C.) above about 50 seconds and an initial boiling point above about 350° F. (177° C.) and said emulsifying agent is compatible with the other ingredients and forms an emulsion when agitated with a water solution of the alkali metal inorganic salt;

removing water from the emulsion; and

filtering the substantially water-free suspension to produce the filtrate as said additive.

6. A carbon black reaction additive comprising a hydrocarbon oil having a Bureau of Mines Correlation Index of 90 to 150, an SUS viscosity at 100° F. (37.8° C.) above about 50 seconds, an initial boiling point above about 350° F. (177° C.), containing from 10 to 5,000 parts per million by weight, based on the oil, measured as potassium of a finely divided inorganic potassium compound incorporated into said oil as a fine suspension in oil, the particles of K_2CO_3 being less than about 0.04 millimeters, said suspension having been prepared by:

(a) forming an aqueous solution of an inorganic potassium compound containing at least 5 weight percent of said compound;

(b) preparing a blend of a hydrocarbon oil and an emulsifying agent in which the amount of emulsifying agent present ranges from about 5 to about 30 weight percent of the total mass and wherein said emulsifying agent is an emulsifying agent which is compatible with the other ingredients in the carbon black reaction additive and forms an emulsion when agitated with a water solution of the inorganic potassium compound;

(c) mixing the aqueous solution of (a) with the oil-emulsifying agent blend of (b) under conditions which form an emulsion;

(d) heating the emulsion which is formed in (c) under conditions of temperature and pressure sufficient to substantially remove water therefrom;

(e) subjecting the substantially water-free suspension obtained in (d) to filtration and obtaining a liquid filtrate containing a fine colloidal-like suspension of said potassium compound in oil; and

(f) recovering said fine suspension of potassium compound in oil.

4,148,745

METHOD OF PREPARING PHOSPHORIC ACID ESTERS FOR NON-POLLUTING STORAGE BY INCORPORATION IN POLYVINYL CHLORIDE

Günter Rudolph, Karlsruhe, and Werner Hild, Leopoldshafen, both of Fed. Rep. of Germany, assignors to Gesellschaft fur Kernforschung m.b.H., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 384,755, Jul. 31, 1973, abandoned. This application Oct. 27, 1977, Ser. No. 846,257
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1973, 2330845
Int. Cl.[2] G21F 9/20, 9/36
U.S. Cl. 252—301.1 W **18 Claims**

1. A method for preparing phosphoric acid ester used in reprocessing spent nuclear fuels and/or blanket materials for non-polluting storage, which phosphoric acid ester has been separated from hydrocarbons, which comprises contacting the separated phosphoric acid ester containing radionuclides and decomposition products with a solidification matrix which consists of crushed polyvinyl chloride (PVC), in a weight ratio of phosphoric acid ester to PVC of 5 to 1 or less.

15. An essentially nonvolatile mass which does not flow at room temperature and consists of an admixture of

(a) at least one phosphoric acid ester contaminated with radioactive material and which has been separated from hydrocarbon and

(b) polyvinyl chloride, in the weight ratio of phosphoric acid ester to polyvinyl chloride being at most 5 to 1.

4,148,746

AQUEOUS GELS

Daniel F. Klemmensen, Akron, and Richard G. Bauer, Kent, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 26, 1977, Ser. No. 836,863
Int. Cl.[2] E23B 43/22; E21B 33/138
U.S. Cl. 252—316 **12 Claims**

1. An aqueous medium comprising water to which has been added a water thickening amount of a water thickening polymer which is prepared by polymerizing at least one alkyl acrylate monomer and at least one carboxylic polymerizable monomer selected from the group consisting of acrylic acid and methacrylic acid which are present from 20 to 95 parts by weight per hundred parts of total monomer being polymerized and utilizing, as an ionic emulsifier, an emulsifier selected from the group consisting of disodium or diammonium nonylphenoxy polyethoxy sulfosuccinate having the general formula:

$$CH_3(CH_2)_8C_6H_4O$$
$$(CH_2CH_2O)_{8-16}COCH_2CH(COOM)SO_3Q$$

wherein Q is sodium or ammonium and a sodium or ammonium lauryl polyethoxysulfate having the general formula:

$$CH_2(CH_2)_{11}O(CH_2CH_2O)_{8-16}SO_3Q$$

wherein Q is sodium or ammonium, said polymer in latex form being neutralized to a pH ranging between a pH of 5.5 to 11.5.

4,148,747

ANTIOXIDANT COMPRISING A HYDROXY AROMATIC COMPOUND CONTAINING SULFUR AND AN ORGANIC PHOSPHONATE

Bernard J. Lyons, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 405,554, Oct. 11, 1973, abandoned. This application Oct. 10, 1974, Ser. No. 513,864
Int. Cl.[2] C09K *15/32;* C08K *5/05, 5/36, 5/16*
U.S. Cl. 252—400 A 16 Claims

1. An antioxidant composition suitable for use with polymers subject to oxidative degradation, comprising a mixture of a non-metallic hydroxy aromatic compound having at least one sulfur atom attached to an aromatic carbocyclic ring and an organic phosphonate compound having the general formula

wherein any two or all three of R, R′, and R″ may be the same or different and may contain further phosphonic moieties and wherein R is independently selected from the group consisting of substituted and unsubstituted alkyl, alkenyl, aryl, aralkyl, alkylaryl and triazine and wherein R′ and R″ are independently selected from the group consisting of, substituted and unsubstituted alkyl, alkenyl, aryl, alkylaryl, aralkyl and triazine wherein R′ and R″ can be linked together to form a ring.

4,148,748

NONREVERSIBLE FREEZE-THAW INDICATOR

Robert G. Hanlon, Indianapolis; Joe A. Craig, Speedway, both of Ind., and Leigh B. Bangs, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 737,886, Nov. 2, 1976, abandoned. This application Feb. 22, 1977, Ser. No. 771,049
Int. Cl.[2] C09K *3/00*
U.S. Cl. 252—408 12 Claims

1. A nonreversible freeze indicator adapted to detect whether an article has been subjected to freezing conditions comprising an encapsulated translucent to opaque colloidal dispersion of organic solid particles suspended in a liquid medium, said colloidal dispersion having the property of becoming nonreversibly destabilized upon freezing which thereafter coagulates to form a non-flowing waxy gel when raised above its freezing temperature thereby providing a telltale visual sign that said indicator has been subjected to freezing conditions, said organic solid particles having a diameter of about 0.7 microns or less and said dispersion having from about 10 weight percent to about 50 weight percent of said organic solid particles.

4,148,749

REGENERATION OF METAL PROMOTED PLATINUM GROUP CATALYST BY SUPERHALOGENATING AT THE END OF A HYDROCARBON CONVERSION CYCLE

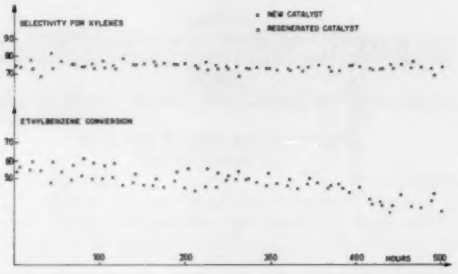
Charles Ab der Halden, Chaville; Marcellin Espeillac, and Georges Szabo, both of Le Havre, all of France, assignors to Compagnie Francaise de Raffinage, France

Filed Dec. 22, 1976, Ser. No. 753,195
Claims priority, application France, Dec. 30, 1975, 75 40128
Int. Cl.[2] B01J *23/96, 21/20;* C10G *35/08;* C07C *15/00*
U.S. Cl. 252—415 38 Claims

1. Regeneration process for a hydrocarbon conversion catalyst containing on a refractory mineral oxide carrier at least one platinum group metal and at least one group IVA metal as a promoter, which catalyst is functionally enhanced by added halogen and which has been at least partially deactivated by coke during the use of said catalyst in the conversion process, the conversion cycle ending with the separation of said catalyst from the conversion process for the purpose of regeneration, said regeneration process comprising the following successive steps:

(a) increasing the halogen content of said catalyst by treating it in the absence of oxygen and in the presence of the charge for the hydrocarbon conversion process or of an inert gas, during about the end of said cycle or thereafter, with halogen and/or a halogen releasing compound to give a superhalogenated catalyst which has a substantial excess of halogen over the final halogen content of regenerated catalyst and which excess is sufficient to substantially reduce the duration and severity of halogen treatment in step (c);

(b) treatment of the superhalogenated catalyst with a gas



stream containing oxygen to burn off the deactivating coke at a rate which avoids excessive temperature which would damage the catalyst;

(c) treatment of the catalyst with a gas stream containing oxygen, water, and a halogen and/or halogen releasing compound for a time and at a temperature and a halogen content of said latter gas stream which is sufficient to adjust the halogen content of said catalyst to that amount useful to restore the particular hydrocarbon conversion use for which said catalyst is designed, and also to redisperse the platinum group metal which may have become agglomerated during the preceding cycle;

(d) reduction of the catalyst with a hydrogen-containing stream.

4,148,750

REDISPERSION OF NOBLE METALS ON SUPPORTED CATALYSTS

Lloyd A. Pine, Greenwell Springs, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 10, 1977, Ser. No. 758,070
Int. Cl.[2] B01J *29/38, 29/12, 29/32;* L10G *13/10*
U.S. Cl. 252—416 15 Claims

9. A process for redispersing a noble metal on a supported zeolite-containing hydrocarbon conversion catalyst, at least a portion of said noble metal having become agglomerated during contact with an oxygen-containing gas at a temperature ranging from about 700° to 1100° F., which comprises contacting said agglomerated catalyst with a solution containing at least a stoichiometric amount, based on the amount of noble metal present, of ethylenediaminetetraacetic acid or a salt thereof to incipient wetness for a time sufficient to redisperse a major portion of the metal throughout the catalyst, the temperature and pressure during said contacting being such that said solution is maintained in the liquid phase, and thereafter drying the redispersed catalyst.

4,148,751
METHOD OF REGENERATING COKE-CONTAMINATED CATALYST WITH SIMULTANEOUS COMBUSTION OF CARBON MONOXIDE

Charles L. Hemler, Jr., Mt. Prospect, and Laurence O. Stine, Western Springs, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 654,260, Feb. 2, 1976, abandoned. This application Jun. 17, 1976, Ser. No. 697,074

Int. Cl.[2] B01J *21/20, 23/96, 29/38;* **C10G** *11/04*

U.S. Cl. 252—419 **28 Claims**

1. A method for regenerating a coke-contaminated hydrocarbon conversion catalyst with simultaneous carefully-controlled combustion of CO which comprises the steps of:

(a) passing said coke-contaminated catalyst containing from about 0.2 to about 1.5 wt. % coke from a hydrocarbon conversion zone into a regeneration zone;

(b) adding to the regeneration zone, independently of said coke-contaminated hydrocarbon conversion catalyst and free of reactor feed stock in an amount selected to promote the combustion of CO to CO_2, a CO oxidation promoter consisting essentially of about 0.001 wt. % to about 10.000 wt. % platinum supported on alumina possessing a particle size of from about 1 micron to about 200 microns, said promoter being present in an amount of from about 0.1 to about 25 wt. ppm of the circulating catalyst inventory calculated on an elemental metal basis;

(c) passing oxygen-containing regeneration gas into said regeneration zone in an amount selected to burn said coke from said coke-contaminated hydrocarbon conversion catalyst and to provide sufficient excess oxygen to accomplish the desired amount of CO combustion;

(d) reacting a first portion of the oxygen-containing regeneration gas with said coke-contaminated hydrocarbon conversion catalyst in said regeneration zone at oxidation conditions which are selected to remove said coke from said coke-contaminated hydrocarbon conversion catalyst and to produce a flue gas containing CO and which are sufficient to cause combustion of CO to CO_2 in the presence of said independently added oxidation promoter;

(e) simultaneously contacting said flue gas and a second portion of the oxygen-containing regeneration gas with said CO oxidation promoter in said regeneration zone in the presence of regenerated catalyst at said oxidation conditions, thereby (i) making a controlled quantity of exothermic heat of reaction available for operation of said regeneration zone and (ii) decreasing the amount of CO in flue gas to less than 1000 ppm; and,

(f) passing said platinum-alumina CO-promoter in admixture with said regenerated catalyst from said regeneration zone to the hydrocarbon reaction zone and back again to said regeneration zone.

4,148,752
PRODUCTION OF ACTIVATED CARBON IN A REACTOR HAVING A LOWER STATIC LAYER AND AN UPPER FLUIDIZED LAYER

Alex Bürger, Cologne; Hans Guth, Leverkusen; Werner Ludovici, Leverkusen, and Hermann Rohe, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

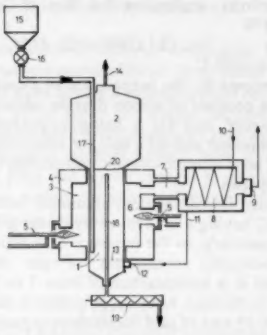
Continuation-in-part of Ser. No. 783,369, Mar. 31, 1977, abandoned. This application Jul. 14, 1978, Ser. No. 924,787

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1976, 2615437

Int. Cl.[2] C01B *31/10;* **B01J** *21/18*

U.S. Cl. 252—421 **2 Claims**

1. In the production of activated carbon by passing a preheated gaseous activation medium through a zone containing a bed of carbon-containing material while indirectly heating to maintain a temperature of about 500° to 1100° C., supplying carbon-containing material to the bed, and removing activated carbon from the bed, the improvement which comprises making the reaction zone cylindrical, introducing the activation medium and the carbon-containing material co-current near the bottom of the zone at a rate such that activation medium and gaseous products which are formed are in a quantity sufficient to maintain in the zone a lower static layer and an upper fluidized layer, the lower static layer comprising about 5 to 45% by weight of the lower plus upper layers, the density of



the lower layer ranging from about 1.3 to 1.8 times that of the upper fluidized layer, introducing the carbon-containing material in the lower peripheral part of the zone and removing the activated carbon from the upper central part of the zone, the average residence time of the carbon-containing material in the zone being from about 0.2 to 6 hours, thereby converting about 30 to 55% by weight of the carbon-containing material to gaseous products.

4,148,753
NEUTRALIZATION OF PHOSPHORIC ACID ACTIVATED CARBON

Peter T. Sarjeant, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,240

Int. Cl.[2] C01B *31/12;* **B01J** *21/18*

U.S. Cl. 252—423 **12 Claims**

1. A process for producing activated carbon which comprises:

A. saturating a granulated cellulosic source material with phosphoric acid;

B. carbonizing said saturated source material in an activation furnace to produce activated carbon;

C. washing said activated carbon to remove a substantial portion of said acid remaining on said carbon after activation;

D. adding to said washed carbon a sufficient amount of additive material to substantially neutralize such residual phosphate ion remaining on said washed carbon by in situ binding of same as a substantially insoluble salt, said additive material being oxides and hydroxides of elements selected from the group consisting of aluminum, zinc, and the alkaline earth elements; and,

E. drying said additive combined carbon at a rate of from ambient to 400° F. in approximately 30 minutes.

4,148,754

PROCESS FOR THE PREPARATION OF A CATALYST AND CATALYST USED IN OLEFIN POLYMERIZATION

Wolfgang Strobel, Hofheim, and Rainer Franke, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 23, 1976, Ser. No. 744,310

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1976, 2553179

Int. Cl.[2] C08F *4/02, 4/64*

U.S. Cl. 252—429 C 30 Claims

1. In a process for the preparation of a catalyst by reacting the reaction product of silicon dioxide, aluminum oxide, or a mixture thereof, and (a) a halogen-containing magnesium-organic compound and (b) a halogen compound of a transition metal, with an aluminum-organic compound, the improvement which comprises

(1) reacting silicon dioxide, aluminum oxide, or a mixture thereof, having a content of hydroxyl groups of from 0.5 to 50 mmols/g, in the presence of a diluent, with a magnesium-organic compound of the formula RMgX, wherein R is hydrocarbon of from 1 to 20 carbon atoms and X is chlorine, bromine or iodine, in an amount of from 0.1 to 0.95 mol of said magnesium-organic compound per mol of hydroxyl groups of the silicon dioxide, aluminum oxide or mixture thereof;

(2) reacting the solid reaction product of step (1) in suspension with a halogen-containing titanium compound of the formula $TiX_n(OR^1)_{4-n}$, wherein n is an integer of from 1 to 4, X is chlorine or bromine and R^1 is hydrocarbon of from 1 to 12 carbon atoms, in an amount of from 0.01 to 1 mol of said titanium compound per mol of hydroxyl groups of the silicon dioxide, aluminum oxide or mixture thereof, and in an amount such that the atomic ratio of magnesium to titanium in the reaction product is in the range of from 0.1 to 10; and

(3) reacting the product of step (2) with a sufficient amount of an aluminum-organic compound which is a compound of the formula AlR_3^6 or AlR_2^6H, R^6 being hydrocarbon of from 1 to 16 carbon atoms, a compound of the formula R_2^5AlCl or $R_3^5Al_2Cl_3$, R^5 being hydrocarbon of from 1 to 16 carbon atoms, or a product of the reaction of an aluminum trialkyl or an aluminum dialkyl hydride, wherein said alkyl is of from 1 to 16 carbon atoms, with a diene of from 4 to 20 carbon atoms to produce a catalyst which is active in polymerizing a 1-olefin.

4,148,755

ZIEGLER CATALYSTS

Ferdinando Ligorati, Usmate; Renzo Invernizzi; Carlo Collu, both of Milan, and Maurizio Fontanesi, Concorezzo, all of Italy, assignors to Euteco S.p.A., Milan, Italy

Filed Oct. 6, 1977, Ser. No. 840,188

Claims priority, application Italy, Oct. 19, 1976, 28519 A/76

Int. Cl.[2] C08F *4/02, 4/64*

U.S. Cl. 252—429 C 8 Claims

1. In a Ziegler catalytic system formed by the combination of an organo-metallic compound of a metal of Group I, II or III of the Periodic System of the Elements according to Mendeleef and a compound of a heavy metal of Group IV, V or Vi of said Periodic System supported on an alumina carrier, the improvement wherein the carrier is essentially an activated amorphous alumina containing from 0.3 to 30% by weight of one or more salts of aluminum with at least one oxygenated inorganic anion selected from the group consisting of sulphate, phosphate, chlorate, perchlorate and halogen-sulphonate anions or of a mixture of the latter with one or more salts of aluminum with halogen anions, said activated amorphous alumina being prepared by precipitating aluminum hydroxide gel from a solution of aluminum salt at a pH value of from 7 to 10, introducing said inorganic anions into said gel by co-precipitation with and/or further addition to the latter, in such conditions as to ensure in the alumina content of inorganic anions of from 0.2 to 25% by weight and a content of cations other than aluminum of less than 0.25% by weight, the permanence time of the gel under moist conditions being less than 12 hours, drying the gel and activating the resulting amorphous alumina by calcination at a temperature of from 250° to 700° C.

4,148,756

NOVEL TRIALKYL ALUMINUM COCATALYST

Arthur W. Langer, Jr., Watchung, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 812,530, Jul. 5, 1977, which is a continuation-in-part of Ser. No. 790,832, Apr. 25, 1977, and Ser. No. 790,837, Apr. 25, 1977. This application Mar. 29, 1978, Ser. No. 891,317

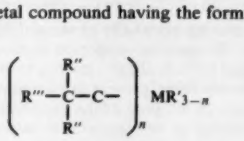
Int. Cl.[2] C08F *4/62, 4/64, 4/68, 4/10*

U.S. Cl. 252—429 B 20 Claims

1. An improved catalyst composition adaptable for use in polymeric polymerization which comprises a mixture of:

(a) Group IVB to VIII transition metal halide on a support; and

(b) an alkyl metal compound having the formula:



wherein R' is selected from the group consisting of C_1 to C_{20} primary alkyl, alkenyl and aralkyl groups and hydride; R'' is a methyl or ethyl group and R''' is a C_1 to C_{10} alkyl group, M is selected from the group consisting of aluminum, gallium and indium and n = 1 or 2, wherein said composition includes at least one Lewis base, with the proviso that said Lewis base does not cause excessive cleavage of metal-carbon bonds or loss of active sites.

4,148,757

PROCESS FOR FORMING MULTI-COMPONENT OXIDE COMPLEX CATALYSTS

James F. Brazdil, Bedford; Dev D. Suresh, Macedonia, and Robert K. Grasselli, Chagrin Falls, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Aug. 10, 1977, Ser. No. 823,319

Int. Cl.[2] B01J *23/14, 23/18, 23/28, 23/30*

U.S. Cl. 252—432 13 Claims

1. In a process for producing a molybdate or tungstate oxide complex catalyst in which compounds capable of yielding said catalyst are combined together so as to form a pre-catalyst solid and the pre-catalyst solid is calcined in air to activate said pre-catalyst and thereby form said catalyst, the improvement wherein the key catalytic phase of said catalyst comprising a molybdate and/or tungstate of Bi, Te, Sb, Sn, Cu or mixtures thereof is pre-formed prior to combining with the other elements in said catalyst; and further wherein none of the Group VIII elements in said catalyst, if any, is separately preformed into a molybdate or tungstate prior to combining with the key catalyst phase, said catalyst having a composition defined by the formula:

$$[M_mN_nO_x]_q\,[A_aC_bD_cE_dF_eN_fO_y]_p$$

wherein

M = Bi, Te, Sb, Sn and/or Cu

N = Mo and/or W

A = alkali, Tl, and/or Sm

C = Ni, Co, Mn, Mg, Be, Ca, Sr, Ba, Zn, Cd and/or Hg

D = Fe, Cr, Ce, and/or V

E = P, As, B, Sb

F = rare earth, Ti, Zr, Nb, Ta, Re, Ru, Rh Ag, Au, Al, Ga, In, Si, Ge, Pb, Th, and/or U, and further

wherein

a=0–4
b=0–20
c=0.01–20
d=0–4
e=0–8
f=8–16
m=0.01–10
n=0.1–30, and
x and y are numbers such that the valence requirements of the other elements for oxygen in the key catalytic phase and the host-catalyst phase, respectively, are satisfied; and the ratio q/p is 0.1 to 10.

4,148,758

REFORMING WITH MULTIMETALLIC CATALYSTS

Paul E. Eberly, Jr., Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 826,996, Aug. 23, 1977, abandoned. This application Dec. 19, 1977, Ser. No. 862,114

Int. Cl.[2] B01J *27/02;* **C10G** *35/06*

U.S. Cl. 252—436 **7 Claims**

1. In a process for preparing a reforming catalyst wherein a Group VIII noble metal hydrogenation-dehydrogenation component in concentration ranging from about 0.01 to about 3 percent, based on the weight of the catalyst, a component comprised of iridium or rhenium, or both, in concentration ranging from about 0.01 to about 3 percent, based on the weight of the catalyst, and a halogen component in concentration ranging from about 0.1 to about 3 percent, based on the weight of the catalyst, composited with an inorganic oxide support, the improvement which comprises incorporating sulfurous acid or sulfuric acid, or both, as a component within said catalyst at the time of its preparation in concentration ranging from about 0.001 to 3 percent, based on the weight of the catalyst, sufficient to increase the activity, or selectivity, or both.

4,148,759

HYDROCARBON CONVERSION CATALYTIC COMPOSITE

Lee Hilfman, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 684,055, May 6, 1976, abandoned. This application Jun. 27, 1977, Ser. No. 810,323

Int. Cl.[2] B01J *29/06;* **C10G** *13/02*

U.S. Cl. 252—455 Z **3 Claims**

1. A catalytic composite comprising a combination of a nickel component, a molybdenum component and a platinum component with a zeolitic carrier material wherein said platinum component is present in an amount sufficient to result in the composite containing, on an elemental basis, about 0.2 to about 0.5 percent by weight platinum.

4,148,760

CATALYST FOR OXIDIZING SULFUR OR SULFUR COMPOUNDS

André Sugier, Rueil Malmaison; Philippe Courty, Houilles; André Deschamps, Noisy le Roi, and Henri Gruhier, Chatillon sous Bagneux, all of France, assignors to Institut Francais du Petrole, Paris, France

Filed Dec. 6, 1977, Ser. No. 858,125

Claims priority, application France, Dec. 6, 1976, 76 37566

Int. Cl.[2] B01J *21/12, 23/84*

U.S. Cl. 252—455 R **12 Claims**

1. A catalyst comprising 1–70% by weight of iron oxide consisting essentially of Fe_2O_3, 1–20% by weight of vanadium oxide consisting essentially of V_2O_5 and at least 10% by weight of aluminous cement, the latter comprising at least 50% by weight of calcium aluminate and/or barium aluminate.

4,148,761

CONDUCTOR COMPOSITIONS COMPRISING ALUMINUM, SILICON AND GLASS

Casimir W. Kazmierowicz, Mission Viejo, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 31, 1977, Ser. No. 764,093

The portion of the term of this patent subsequent to Jan. 24, 1995, has been disclaimed.

Int. Cl.[2] H01B *1/08;* **B32B** *15/00*

U.S. Cl. 252—512 **5 Claims**

1. An electroconductive material comprising from about 0.25 to about 30 weight percent silicon, from about 10 to about 50 weight percent glass having a softening point below 660° C., and from about 20 to about 90 weight percent aluminum wherein said material has a lower resistivity than an aluminum-glass electroconductive material formed from a composition having the same glass and binder content as employed in the composition from which the silicon-aluminum-glass electroconductive material is formed.

4,148,762

COSMETIC CLEANING AGENTS CONTAINING BETAINES AND PROCESS

Karlheinz Koch, Haan, and Fanny Scheuermann, Dusseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany

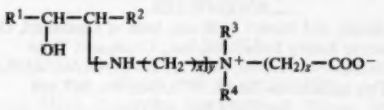
Filed Apr. 5, 1977, Ser. No. 784,738

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1976, 2616800

Int. Cl.[2] C11D *1/88, 1/94*

U.S. Cl. 252—544 **17 Claims**

1. A cosmetic cleaning agent, comprising an acid neutralized derivative of a surface-active betaine of the formula



(I)

wherein

R^1 and R^2 are the same or different and are alkyl radicals of 1 to 18 carbon atoms, provided that the sum of the number of carbon atoms of R^1 and R^2 is 9 to 18;

R^3 and R^4 are the same or different and are lower alkyl or alkylol groups of 1 to 4 carbon atoms; x is an integer of from 2 to 4; y is 1; and z is an integer of from 1 to 4; and an anionic surfactant in a quantity of from 5 to 30 percent by weight, relative to the total weight of the agent; and a carrier therefor.

4,148,763

RECLAIM OIL FOR DIGESTER PROCESS FOR RUBBER RECLAIMING

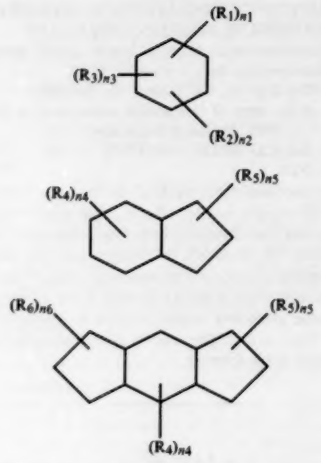
Jay G. Bryson, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 20, 1978, Ser. No. 926,595

Int. Cl.[2] B29H *19/00;* **C08J** *11/04*

U.S. Cl. 260—2.3 **9 Claims**

1. An improvement in the digester process for reclaiming rubber, which process normally comprises breaking down a quantity of scrap rubber mixed in definite proportions with water, a reclaiming catalyst, and reclaiming oil under conditions of elevated temperature and pressure for a period lasting from 1 to 10 hours, wherein the improvement comprises using as the reclaim oil a mixture of substituted aromatic compounds with structures selected from the following group:



wherein R_1, R_2, R_3, and R_4 are radicals selected from the group consisting of alkyl radicals (2–20C) and aralkyl radicals (7–20C); R_5 and R_6 are radicals selected from the group consisting of H, alkyl (1–20C), and aralkyl (7–20C); $n_1 + n_2 + n_3 = 1$–4; n_4, n_5, and $n_6 = 1$–2; wherein the initial boiling point of the reclaim oil is 240° C. or greater, and wherein the molecular weight range of substantially all of the components of the mixture is 200–1000.

4,148,764

COPOLYESTERS USEFUL IN BLOOD SEPARATION ASSEMBLIES

James Lamont, and Robert J. Braun, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 795,992, May 11, 1977, Pat. No. 4,101,422. This application Jan. 5, 1978, Ser. No. 867,146

Int. Cl.[2] **C08G** *63/16*

U.S. Cl. 260—22 D **10 Claims**

1. A copolyester composition useful as a barrier material in blood separation assemblies comprising the reaction product of essentially stoichiometric amounts of

(a) a saturated aliphatic dicarboxylic acid having 4 to 12 carbon atoms,

(b) a polymeric fatty acid containing 75% by weight or more C_{36} dibasic acid, and

(c) a branched-chain aliphatic dihydric alcohol having 3 to 8 carbon atoms, a mixture of said branched-chain dihydric alcohols, or a mixture containing at least 50% by weight said branched-chain aliphatic dihydric alcohols and a straight-chain aliphatic dihydric alcohol having 2 to 8 carbon atoms, the equivalents ratio of (a) to (b) ranging from 0.80:0.20 to 0.97:0.03; said copolyesters having an average molecular weight of about 2,000 to 8,000, 210° F. kinematic viscosity from 2,000 to 8,000 centistokes and density in the range 1.015 to 1.060 g/cm^3.

4,148,765

POLYESTER RESINS CONTAINING DICYCLOPENTADIENE

Donald L. Nelson, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 758,095, Jan. 10, 1977, abandoned. This application Dec. 27, 1977, Ser. No. 864,974

Int. Cl.[2] **C08G** *63/02, 63/20*

U.S. Cl. 260—22 CB **8 Claims**

1. The resin produced by reacting a mixture comprising

(A) a reactant selected from the group consisting of

(1) an alpha, beta ethylenically unsaturated dicarboxylic acid, anhydride thereof, or mixtures thereof,

(2) a saturated polycarboxylic acid or the anhydride thereof,

(3) mixtures of (1) and (2),

(B) about 0.03 to about 10 moles water per mole of carboxylic acid or anhydride;

(C) about 0.05 mole to about 1.0 mole of a C_{10} hydrocarbon concentrate per mole of carboxylic acid or anhydride, and

(D) a polyol or an alkylene oxide, with the proviso that when (D) is an alkylene oxide of 2–4 carbons, (A) is at least 90% by weight of a dicarboxylic acid anhydride, and when (D) is a polyol and (A) is a polycarboxylic acid or anhydride, there is present 0–25% by weight based on the total weight of polycarboxylic acid or anhydride of

(E) a monohydric alcohol having 3–18 carbon atoms,

(F) a fatty acid or oil having up to 22 carbon atoms,

(G) a monocarboxylic aromatic acid, or

(H) mixtures of (E), (F) or (G).

4,148,766

POLYMER DISPERSION PROCESS

Dorothee M. McClain, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Aug. 15, 1977, Ser. No. 824,874

The portion of the term of this patent subsequent to Apr. 24, 1996, has been disclaimed.

Int. Cl.[2] **C08K** *3/24, 9/05*

U.S. Cl. 260—23 H **11 Claims**

1. A process for dispersing an olevin polymer containing from 0 up to about 15% polar comonomer which comprises agitating said polymer in molten state in an aqueous dispersion system comprising an alkali metal soap together with a water-soluble substantially neutral salt inert to said soap and cooling said system with the polymer in the disperse state to below about 100° C.

4,148,767

INK FOR DRY PLANOGRAPHIC PRINTING

Leonard A. Spicer, Ilford, and Derek J. McGee, Henham, both of England, assignors to Gestetner Limited, London, England

Filed Sep. 29, 1977, Ser. No. 837,863

Claims priority, application United Kingdom, Sep. 29, 1976, 40431/76

Int. Cl.[2] **C09D** *3/42, 3/56, 11/02*

U.S. Cl. 260—22 TN **8 Claims**

1. An ink for dry planographic printing comprising a dispersion of pigment in a substantially non-aqueous vehicle comprising the reaction product of 40–65% of a drying oil or fatty acids derived therefrom, 4–24% of alkyd resin, 10–45% of rosin-modified phenolic resin, and 4–15% of diisocyanate, the percentages being by weight of the vehicle, the said ink having, finely and uniformly dispersed therein, 0.2 to 1% by weight of the ink of a silicone oil having a viscosity of at least 1000 centistokes at 20° C. which is immiscible or only partly miscible with the said vehicle.

4,148,768

POLYMER DISPERSION PROCESS

Dorothee M. McClain, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Aug. 15, 1977, Ser. No. 824,875

Int. Cl.[2] **C08K** *5/09*

U.S. Cl. 260—23 H **7 Claims**

1. In the process of preparing in pulverulent form a normally solid thermoplastic resin selected from the group consisting of polyolefin or olefin copolymer containing up to about 15 weight percent of polar monomer by vigorously agitating said resin in molten form in water in the presence of a dispersing agent at a temperature below the degradation temperature of said resin to produce a dispersion of said resin and cooling said dispersion to below about 100° C. the improvement wherein

the dispersing agent is a lithium salt of a higher saturated fatty acid containing from 18 to 26 carbon atoms.

4,148,769

COMPOSITION FOR RUBBERIZING STEEL CORDS

John M. Swarts, Akron, and Zion S. Lee, Munroe Falls, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 614,661, Sep. 18, 1975, Pat. No. 4,068,041. This application May 9, 1977, Ser. No. 795,416

Int. Cl.[2] C08K 5/09

U.S. Cl. 260—25 9 Claims

1. A rubber composition for bonding to brass plated steel by vulcanization in contact with the brass surface, which composition comprises:

(a) a sulfur-vulcanizable rubber

(b) at least one reinforcing pigment

(c) sufficient sulfur for vulcanization of the rubber, together with a non-scorching vulcanization accelerator, and zinc oxide for activation of the accelerator

(d) about one-fifth part to ten parts of litharge for each hundred parts by weight of rubber, and

(e) about one-half part to fifteen parts of a cobalt salt of a soap forming acid which salt is dispersable in rubber for each hundred parts by weight of rubber.

4,148,770

FURNITURE FABRIC AND COATING

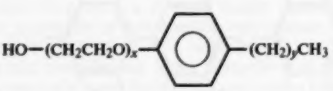
Arno W. Stahle, Chamblee, and Larry M. Bailey, Decatur, both of Ga., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 7, 1977, Ser. No. 766,490

Int. Cl.[2] C08J 7/04; C08L 9/06, 9/08, 93/04

U.S. Cl. 260—27 BB 3 Claims

1. A coating comprising: about 100 parts by weight of styrene-butadiene rubber, about 10–100 parts by weight of wood rosin comprising abietic acid, and sufficient parts by weight of an alkylaryl polyether alcohol to both aid processing and overcome blocking problems while still allowing sufficient adhesion to provide a dimensional stability of at least 3 pounds; wherein said styrene-butadiene rubber has a styrene to butadiene ratio of about 100 parts by weight of styrene to between about 66–180 parts by weight of butadiene and wherein said alkylaryl polyether alcohol has a formula:



wherein x is 12–20 and y is 8–10.

4,148,771

METHOD OF MAKING NOVEL RUBBERY BLOCK COPOLYMERS AND PRESSURE-SENSITIVE ADHESIVES

Larry L. Nash, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 23, 1977, Ser. No. 809,491

Int. Cl.[2] C08L 25/10

U.S. Cl. 260—27 BB 18 Claims

1. An adhesive composition comprising about 100 parts by weight of a rubbery teleblock copolymer, about 40 to 150 parts by weight of tackifier, about 0 to 100 parts by weight of plasticizer, and about 0.1 to 5 parts by weight of stabilizer, wherein said rubbery teleblock copolymer is prepared by:

(a) polymerizing an initial portion of monovinyl-substituted aromatic hydrocarbon in the presence of an initial portion of an organomonolithium polymerization initiator to form an initial living polymer mixture,

(b) adding sequentially to said initial living polymer mixture at least one further portion of monovinyl-substituted aromatic hydrocarbon and at least one further portion of organomonolithium initiator and letting each further portion of monovinyl-substituted aromatic hydrocarbon polymerize such as to form a further living polymer mixture,

(c) adding conjugated diene to said further living polymer mixture and letting said conjugated diene polymerize such as to form a living polymer, and

(d) coupling said living polymer to form said rubbery teleblock copolymer.

4,148,772

AMINE ACID SALT-CONTAINING POLYMERS FOR CATIONIC ELECTRODEPOSITION

Joseph R. Marchetti, Greensburg; Robert R. Zwack, New Kensington, and Robert D. Jerabek, Glenshaw, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 648,982, Jan. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 547,323, Feb. 5, 1975, Pat. No. 3,947,339, which is a continuation-in-part of Ser. No. 203,875, Dec. 1, 1971, abandoned. This application Dec. 8, 1977, Ser. No. 858,755

Int. Cl.[2] C08G 18/32, 18/58, 59/14

U.S. Cl. 260—29.2 EP 16 Claims

1. A cationic, water-dispersible resin, electrodepositable on the cathode, comprising the ungelled reaction product of:

(A) a polyepoxide having a molecular weight of at least 350,

(B) a secondary amine,

(C) a polyester polyol containing two alcoholic primary hydroxyl groups, said polyester polyol being selected from the class consisting of polylactones and polyesters prepared by the polyesterification of organic polycarboxylic acids or functional derivatives thereof with organic polyols; the equivalent ratio of polyester polyol to polyepoxide being about 0.1 to about 0.8:1;

said reaction product being dispersible in water with the aid of acid to provide cationic groups in the resin.

4,148,773

POLYCARBONATE COMPOSITION CONTAINING SILOXANE PLASTICIZER

Victor Mark, Evansville, and Phillip S. Wilson, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1977, Ser. No. 865,294

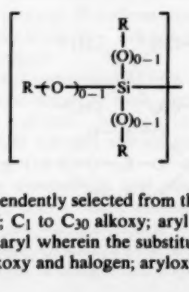
Int. Cl.[2] C08L 69/00

U.S. Cl. 260—29.1 SB 6 Claims

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of a siloxane plasticizer characterized by the following formulae:

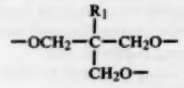
I.

wherein V, W, X and Y are independently selected from the following formula:

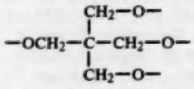


wherein R is independently selected from the group consisting of C_1 to C_{30} alkyl; C_1 to C_{30} alkoxy; aryl of 6 to 14 carbon atoms; substituted aryl wherein the substituents are C_1 to C_{30} alkyl, C_1 to C_{30} alkoxy and halogen; aryloxy of 6 to 14 carbon

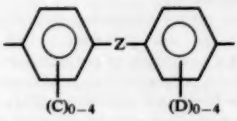
atoms; a and b are integers of 0 to 1; when a or b are 0, then A is



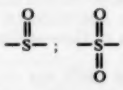
wherein R_1 is hydrogen or the same as R; when both a and b=1, then A is



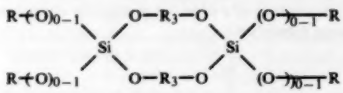
when both a and b=0, then A is —O—R_2—O— wherein R_2 is C_1 to C_{10} alkylene and substituted alkylene wherein the substituents are C_1 to C_{30} alkyl and C_6 to C_{14} aryl; arylene of 6 to 10 carbon atoms and substituted arylene wherein the substituents are C_1 to C_{30} alkyl; C_1 to C_{30} alkoxy and halogen; cycloalkylene of 4 to 20 carbon atoms and substituted cycloalkylene wherein the substituents are C_1 to C_{30} alkyl and aryl of 6 to 14 carbon atoms;



wherein Z is selected from the group consisting of C_1 to C_{10} alkylene; C_1 to C_{20} alkylidene; cycloalkylene of 4 to 20 carbon atoms, cycloalkylidene of 4 to 20 carbon atoms and substituted alkylene, alkylidene, cycloalkylene and cycloalkylidene wherein the substituents are C_1 to C_{30} alkyl and aryl of 6 to 14 carbon atoms; —O—; —S—;

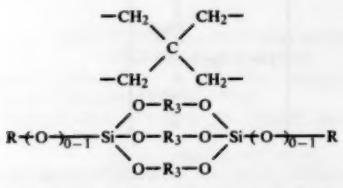


C and D are independently selected from the group consisting of halogen and C_1 to C_{12} alkyl;



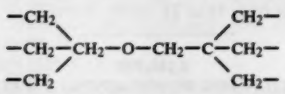
II.

wherein R is as defined previously; R_3 is C_1 to C_{10} alkylene and substituted alkylene wherein the substituents are C_1 to C_{30} alkyl and C_6 to C_{14} aryl; arylene of 6 to 14 carbon atoms and substituted arylene wherein the substituents are C_1 to C_{30} alkoxy and halogen and where two R_3 groups form the following radical:



III.

wherein R and R_3 are as defined previously and wherein the three R_3 groups are replaced by the following radical:



and mixtures thereof.

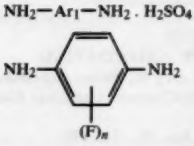
4,148,774

PROCESS FOR PREPARING ANISOTROPIC OLEUM DOPES OF POLYAMIDES BY POLYMERIZING IN SULFUR TRIOXIDE

Frank M. Silver, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

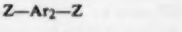
Filed Apr. 7, 1978, Ser. No. 894,460
Int. Cl.[2] C08K *5/36*; C08G *51/44*
U.S. Cl. 260—30.8 R **19 Claims**

1. A process for producing an anisotropic oleum dope of an aromatic polyamide comprising reacting substantially equimolar amounts of at least one diamine monomer selected from the group consisting of diamines of the formulas:



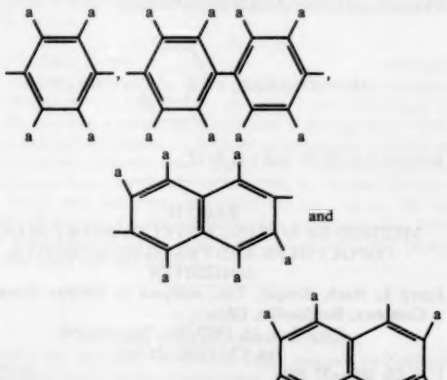
(I)
(II)

with at least one monomer of the formula



(III)

in sulfur trioxide initially containing from 0 to 20% by weight sulfuric acid for a period of time sufficient to obtain in solution a polyamide having an inherent viscosity of at least 0.1, wherein n is 1, 2, 3 or 4, Ar_1 and Ar_2 are each a radical selected from the group consisting of



where "a" is a hydrogen, bromine, fluorine or chlorine atom, Z is a radical selected from the group consisting of —COOH, —CCl_3, and —CBr_3 and wherein said inherent viscosity is measured by dilution at 25° C. of a portion of said dope with 96% sulfuric acid to a polymer concentration of 0.84 g/dl, said process being characterized in that sufficient amounts of monomers are reacted to provide a dope having a polymer concentration above its critical concentration point.

4,148,775

HOT-MELT ADHESIVE COMPOSITIONS

Keizo Shima, Suita; Yuichi Harada, and Yoshinobu Ohya, both of Amagasaki, all of Japan, assignors to Daicel Ltd., Sakai, Japan

Filed Apr. 17, 1978, Ser. No. 897,186
Claims priority, application Japan, Apr. 18, 1977, 52-44928
Int. Cl.[2] C08K 5/36; C08L 77/00
U.S. Cl. 260—30.8 R 9 Claims

1. A hot-melt adhesive composition comprising 100 parts by weight of a polyamide copolymer resin having a melting point of about 80° to about 160° C. and composed of at least three monomers, about 5 to about 30 parts by weight of a terpene-phenol resin having a softening point of about 80° to 120° C., and about 5 to about 10 parts by weight of a plasticizer.

4,148,776

SOLID PAINTS

Alfred N. Dunlop, Weston, and Christopher G. Rickard, Mississauga, both of Canada, assignors to SCM (Canada) Limited, Don Mills, Canada

Continuation-in-part of Ser. No. 534,826, Dec. 20, 1974, Pat. No. 3,994,848. This application Sep. 22, 1976, Ser. No. 725,633
Claims priority, application United Kingdom, Dec. 15, 1975, 51311/75
The portion of the term of this patent subsequent to Nov. 30, 1993, has been disclaimed.
Int. Cl.[2] C08K 5/05
U.S. Cl. 260—33.4 R 18 Claims

1. A dimensionally stable solid paint composition having a gel strength ranging from 100 to 200 millimeter penetration comprising the admixture of:

a. a polymer mixture composition consisting of

(1) a non-bonding non-aqueous dispersion resin comprising a stabilized dispersion of a polymer having a molecular weight ranging from 25,000 to 1,000,000 dispersed as a 25 to 90 weight percent suspension in a non-polar non-solvent, said resin having no reactive functional group sites; and

(2) a solution of an ion-bonding resin having a molecular weight ranging from 1,000 to 7,000 and sufficient reactive acid functional groups selected from carboxylic, sulfonic and phosphonic groups to provide an acid number from 20 to 80, said resin dissolved in a non-polar solvent to provide a 25 to 90 weight percent solution; the proportion of non-bonding non-aqueous dispersion resin to ion-bonding resin being from 2:1 to 8:1;

b. an ionic cross-linking agent comprising a solution or suspension of a metal hydroxide, ammonium hydroxide or organic cation former in a polar solvent of dielectric strength greater than 10, said metal hydroxide selected from the group consisting of sodium, potassium, lithium, barium, calcium, manganese and magnesium;

c. a metallic drier in amounts from about 0 to 5 weight percent based on the total weight of polymer; wherein said composition contains metal hydroxide, ammonium hydroxide, or organic cation former in excess of, from 100 to 600 mole percent, the amount required to neutralize said reactive acid group of the resin.

4,148,777

BINDER FOR FOUNDRY PROCESS

Russell A. LaBar, Grafton, and Jordan J. Kopac, Franksville, both of Wis., assignors to Delta Oil Products Corporation, Milwaukee, Wis.

Filed May 9, 1977, Ser. No. 794,979
Int. Cl.[2] B22C 1/22; C08G 8/28, 18/28
U.S. Cl. 260—37 N 24 Claims

1. The process of preparing shaped foundry products which comprises:

(a) forming a foundry mix by uniformly distributing on a foundry aggregate containing sand as a major constituent a binding amount of up to 10% based on the weight of the aggregate of a binder comprising a mixture of low molecular weight mononuclear methylolated phenols substantially free of dinuclear and polynuclear species;

(b) mixing therewith a polyisocyanate in a concentration of 10 to 500% by weight of the phenolic resin;

(c) shaping the foundry mix in a mold; and

(d) permitting said binder resin composition to react with sand polyisocyanate to form a thermoset copolymer and to bind the shaped foundry mix.

4,148,778

SYNTHETIC ADHESIVE

Ivo Hlavacek, Brno, Czechoslovakia, assignor to Elitex, Koncern textilniho strojirenstvi, Liberec, Czechoslovakia

Continuation of Ser. No. 742,010, Nov. 15, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,547
Int. Cl.[2] C08L 63/02
U.S. Cl. 260—37 EP 7 Claims

1. Synthetic adhesive characterized in that it comprises from 0.1 to 10 percent, by weight, based on the weight of the adhesive, of a water-soluble agent which is insoluble in the adhesive and comprises corrosion inhibitors of the passivation, coating, and alkalinization type, said agent being selected from the group consisting of alkali metal nitrates, alkalinized salts of hexavalent chromium, alkali metal phosphates, alkali metal carbonates, alkali metal silicates and mixtures thereof.

4,148,779

WATER-DISPERSIBLE DYE/RESIN COMPOSITIONS

Samuel E. Blackwell, and Kenneth R. Barton, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 580,082, May 22, 1975, abandoned. This application Oct. 21, 1977, Ser. No. 844,335
Int. Cl.[2] C09B 65/00, 67/00
U.S. Cl. 260—40 R 6 Claims

1. A water-dispersible dye/resin composition comprising

(A) from about 5 to about 60% by weight of disperse dye, and

(B) from about 95 to about 40% by weight of linear, water-dispersible copolyester, or

(C) from 95 to about 40% by weight of a blend of (B) with a saturated aliphatic or cycloaliphatic dicarboxylic acid having from about 6 to about 14 carbon atoms, wherein said acid comprises up to about 70% by weight of said blend,

said water-dispersible copolyester being comprised of

(D) at least one dicarboxylic acid selected from aliphatic of from about 6 to about 30 carbons, cycloaliphatic of from about 4 to about 12 carbons, and aromatic of from about 6 to about 14 carbons,

(E) at least one diol component of from about 2 to about 28 carbons, at least about 20 mole percent of which is a poly(ethylene glycol) having the formula H—$(OCH_2CH_2)_nOH$ wherein n is an integer of from 2 to about 14, and

(F) at least one dicarboxylic acid containing a $—SO_3M$ group attached to an aromatic nucleus of from about 6 to about 14 carbons, wherein M is H^+, Na^+, Li^+ or K^+, and constituting from about 8 mole % to about 45 mole % of the total moles of components (D) and (F).

4,148,780
THERMOPLASTIC MATERIALS

Harald Blümel, Marl, and Klaus zur Nedden, Haltern, both of Fed. Rep. of Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Dec. 6, 1977, Ser. No. 857,948
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1976, 2657272
Int. Cl.[2] C08K *3/04*
U.S. Cl. 260—42.46 4 Claims

1. A thermoplastic material which comprises:
(a) 100 parts by weight of polyolefin elastomer;
(b) more than 50, but no more than 150 parts by weight of crystalline or partially crystalline polyolefin;
(c) 30 to 150 parts by weight of carbon black; and
(d) 3 to 240 parts by weight of chalk, siliceous chalk or a mixture thereof;
wherein polyolefin elastomer component (a) is a saturated elastomer consisting of 15–90% of ethylene and 85–10% of propylene, butene-1 or mixture thereof; or an unsaturated elastomer consisting of ethylene in combination with propylene, butene-1 or mixture thereof, in a ratio of from 15/85 to 90/10, respectively, and an amount of a multiple olefin sufficient to provide from 0.5–30 double bonds per 1000 carbon atoms of the elastomer; and
wherein the crystalline or partially crystalline polyolefin component (b) is polyethylene or a copolymer thereof with an α-olefin having a density of 0.910–0.975 g./cc., and RSV value of 0.5–3.3 dl./g. and a melt index of 0.2–50 g./10 min.; a homo- or copolymer, with an α-olefin, of propylene having a density of 0.90–0.910 g./cc., an RSV value of 1.0–10 dl./g. and a melt index of 0.1–50 g./10 min.; or a homo- or copolymer, with an α-olefin, of butene-1 having a density of 0.910–0.925 g./cc., an RSV value of 1.0–10 dl./g. and a melt index of 0.1–100 g./10 min.

4,148,781
FLEXIBLE BUILDING SHEET MATERIALS

Hiroshi Narukawa; Yasuhira Takeuchi; Koichi Saito, and Yoshio Ohfuji, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jul. 27, 1977, Ser. No. 819,547
Claims priority, application Japan, Aug. 10, 1976, 51-95570
Int. Cl.[2] C04B *11/00*
U.S. Cl. 260—42.51 10 Claims

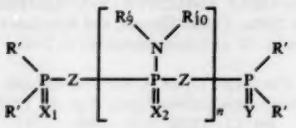
1. A method of manufacturing a building sheet product which comprises: adding calcium sulfate dihydrate power to a thermoplastic resin emulsion containing a suitable amount of water and other additive if desired, gradually preparing a slurry by mixing and stirring said mixture; defoaming or regulating the cell-size of said slurry; molding said slurry into a sheet; drying the sheet; and subjecting the dried sheet to a heat-treatment such that the thermoplastic resin particles within the sheet are fused together to anchor the calcium sulfate dihydrate powder in position.

4,148,782
PHOSPHONIC ACID DERIVATIVES AS FLAMEPROOFING AGENTS

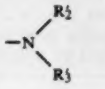
Claudine Mauric, Basel, and Rainer Wolf, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 689,970, May 26, 1976, Pat. No. 4,062,687. This application Sep. 12, 1977, Ser. No. 832,204
Claims priority, application Switzerland, Jun. 20, 1977, 7517/77
Int. Cl.[2] C08K *5/51*
U.S. Cl. 260—45.7 P 12 Claims

1. A flameproofed polymeric organic material other than cellulose containing, as a flameproofing agent, a compound of the formula

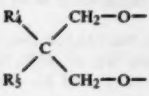


in which each
R′, independently, is a radical —OR_1′ (a′) or



(b′),

or two moieties R′ bound to the same phosphorus atom form a radical (c′)



(c′)

and each of the other two moieties R′, independently, is a radical (a′) or (b′), or the other two moieties R′ bound to the same phosphorus atom form a second radical (c′), independent from the first radical (c′),
each of
X_1, X_2, Y and Z, independently, is oxygen or sulphur,
n is zero or 1,
each R_1′, independently, is ethyl, unsubstituted or substituted by a halo substituent; (C_{3-6}) alkyl, unsubstituted or substituted by 1 to 3 halo substituents; (C_{3-6}) alkenyl, unsubstituted or substituted by 1 or 2 halo substituents; cyclohexyl; phenyl, unsubstituted or substituted by 1 to 3 chloro substituents, by a bromo substituent in the para-position or by 1 to 3 methyl substituents; or benzyl, unsubstituted or substituted by 1 to 3 chloro substituents or by a bromo substituent in the para-position;
each
R_2′, independently, is (C_{1-3}) alkyl; or phenyl, unsubstituted or substituted by a chloro substituent, by a bromo substituent in the para-position or by a methyl substituent;
each
R_3′, independently, is (C_{1-3}) alkyl or hydrogen;
each
R_4′ and R_5′, independently, is (C_{1-4}) alkyl; CH_2Cl or CH_2Br;
or any
R_4′ and R_5′, independently, together with the carbon atom to which they are bound, form a cyclohexylidene, cyclohexenylidene or 3,4-dibromocyclohexylidene ring;
R_9′ is (C_{1-4}) alkyl; cyclohexyl; benzyl or phenyl;
R_{10}′ is hydrogen; (C_{1-4}) alkyl; cyclohexyl; benzyl or phenyl;
or
R_9′ and R_{10}′, together with the nitrogen atom to which they are bound, form a piperidino or morpholinc ring,
with the provisos that:
(i) when one or more of X_1, X_2 and Y is oxygen, then Z can only be oxygen,
(ii) when X_1 and Y are both oxygen, then each moiety R′, independently, is a radical (b′),
(iii) when Z is oxygen and n is zero, only one radical (c′) can be present in the molecule,
(iv) when X_1 or Y is oxygen, then R_2′ is any radical (b′) bound to that same phosphorus atom is other than alkyl,
(v) when two radicals (b′) are attached to a phosphorus atom, and X_1 or Y attached to that same phosphorus atom is sulphur, then both of the moieties R_2′ in these radicals (b′) are (C_{1-3}) alkyl,
(vi) when one of the moieties R_2′ and R_3′ bound to the

same nitrogen atom in a radical (b') is ethyl or propyl, the other must be ethyl or propyl,

(vii) when n is 1, or when n is zero and R_2' in any radical (b') is (C_{1-3}) alkyl, any R_3', or R_3' in that same radical (b'), respectively, is other than hydrogen,

and (viii) when each of X_1 and Y is oxygen, each of R_4' and R_5', independently, in any radical (c') is CH_2Cl or CH_2Br or both R_4' and R_5', together with the carbon atom to which they are bound form one of the rings indicated above.

4,148,783

HYDROXYBENZYLMALONIC ACID DERIVATIVES

Michael Rasberger, Riehen; Jean Rody, Basel, and François Gugumus, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

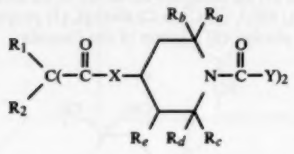
Filed Dec. 6, 1976, Ser. No. 747,758

Claims priority, application Switzerland, Dec. 8, 1975, 15915/75

Int. Cl.[2] C07D *211/46, 211/58*

U.S. Cl. 260—45.8 N **12 Claims**

1. A compound of the formula I,

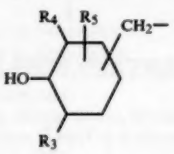


(I)

wherein

X can be oxygen or —NH—,

R_1 represents a hydroxybenzyl group of the formula II



(II)

wherein

R_3 and R_4 each independently represent an alkyl group having 1–9 C-atoms, aralkyl having 7–9 C-atoms or cycloalkyl having 5–8 C-atoms, and

R_5 represents hydrogen or methyl,

R_2 represents, in the case where X is oxygen, hydrogen or a hydroxybenzyl group of the formula II, in the case however where X is —NH—only hydrogen,

Y represents hydrogen, alkyl having 1–17 C-atoms, alkenyl having 2–3 C-atoms, cyclohexyl, phenyl, benzyl, a phenyl or phenylethyl group substituted by 2 alkyl groups each having 1–4 C-atoms and a hydroxyl group, alkylamino having 1–12 C-atoms, dialkylamino having 2–16 C-atoms, anilino, alkoxy having 1–12 C-atoms, benzyloxy or phenoxy,

R_a represents methyl,

R_b represents alkyl having 1–6 C-atoms,

R_c represents alkyl having 1–9 C-atoms, phenyl, benzyl or phenylethyl,

R_d represents alkyl having 1–6 C-atoms, or

R_c and R_d together with the C-atom to which they are bound form a cyclopentane or cyclohexane ring, and

R_e represents hydrogen or alkyl having 1–5 C-atoms, with the number of the C-atoms of R_e being less by 1 than that of R_b.

8. Process for the stabilisation of plastics, against thermal-oxidative ageing and light-induced ageing, which process comprises the use of a compound of the formula I according to claim **1**.

4,148,784

PHENOL STABILIZERS

Roger Malherbe, Muttenz, and Michael Rasberger, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

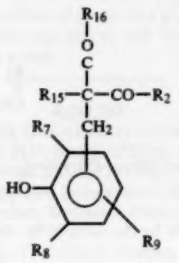
Filed Dec. 16, 1976, Ser. No. 751,775

Claims priority, application Switzerland, Dec. 29, 1975, 16820/75; Nov. 19, 1976, 14580/76

Int. Cl.[2] C07D *211/46, 211/34*

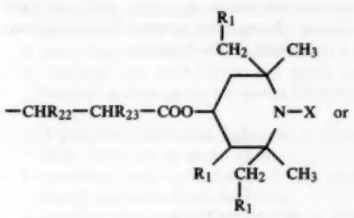
U.S. Cl. 260—45.8 N **7 Claims**

1. A member selected from the group consisting of (A) a compound of the formula

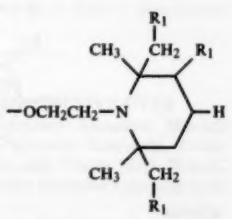


wherein

R_2 represents



or



wherein

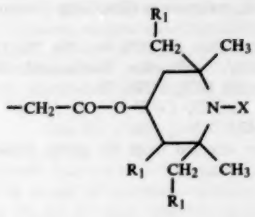
R_1 is H or methyl,

X is (1) H, (2) C_1 to C_4 alkyl, (3) allyl, (4) propargyl, (5) C_2 to C_6 alkoxyalkyl, (6) acetyl, (7) acryloyl, (8) crotonoyl, (9) $—CH_2—COOR_{10}$ where R_{10} is C_1 to C_4 alkyl, (10) $—CH_2—CH(R_{11})—OH$ where R_{11} is H or methyl, or (11) $—COOR_{13}$ where R_{13} is C_1 to C_4 alkyl,

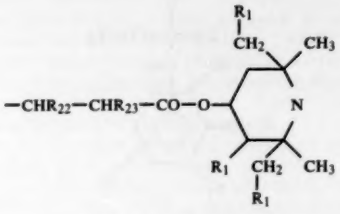
R_7 and R_8 independently represent C_1 to C_9 alkyl, C_7 to C_9 aralkyl or C_5 to C_8 cycloalkyl,

R_9 is H or methyl,

R_{15} represents (1) H, (2) 4-OH-3,5-di C_1 to C_4 alkylbenzyl, (3) C_1 to C_{12} alkyl, (4) C_3 to C_4 alkenyl, (5) propargyl, (6) benzyl, (7) phenyl, (8) a group of the formula

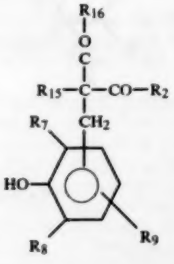


wherein R_1 and X are previously defined, or (9) a group of the formula



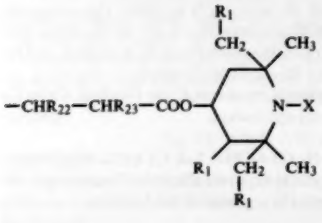
wherein X is as previously defined R_{22} and R_{23} are H or methyl and R_{16} is C_1 to C_{17} alkyl, phenyl, C_7 to C_9 alkyl phenyl, C_{11} to C_{14}-(hydroxy)(alkyl) phenyl or C_{12} to C_{16}-(hydroxy)(alkyl) phenylalkyl and (B) an acid addition salt thereof with an organic or inorganic acid.

4. A composition which comprises a synthetic plastic susceptible to damage from the action of oxygen, heat and light and a stabilizing amount of a member selected from the group consisting of (A) a compound of the formula



wherein

R_2 represents



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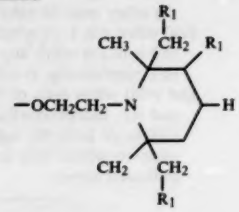


wherein

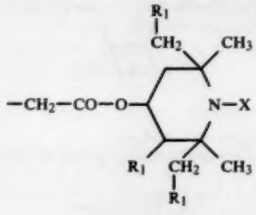
R_1 is H or methyl,

X is (1) H, (2) C_1 to C_4 alkyl, (3) allyl, (4) propargyl, (5) C_2 to C_6 alkoxyalkyl, (6) acetyl, (7) acryloyl, (8) crotonoyl, (9) $-CH_2-COOR_{10}$ where R_{10} is C_1 to C_4 alkyl, (10) $-CH_2-CH(R_{11})-OH$ where R_{11} is H or methyl, or (11) $-COOR_{13}$ where R_{13} is C_1 to C_4 alkyl,

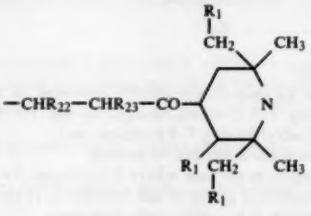
R_7 and R_8 independently represent C_1 to C_9 alkyl, C_7 to C_9 aralkyl or C_5 to C_8 cycloalkyl,

R_9 is H or methyl,

R_{15} represents (1) H, (2) 4-OH-3,5-di C_1 to C_4 alkylbenzyl, (3) C_1 to C_{12} alkyl, (4) C_3 to C_4 alkenyl, (5) propargyl, (6) benzyl, (7) phenyl, (8) a group of the formula



wherein R_1 and X are as previously defined, or (9) a group of the formula



wherein X is as previously defined R_{22} and R_{23} are H or methyl and R_{16} is C_1 to C_{17} alkyl, phenyl, C_7 to C_9 alkyl phenyl, C_{11} to C_{14}-(hydroxy)(alkyl) phenyl or C_{12} to C_{16}-(hydroxy)(alkyl) phenylalkyl and (B) an acid addition salt thereof with an organic or inorganic acid.

4,148,785

ANALGESIC POLYPEPTIDE

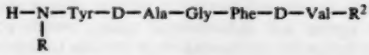
Surendra K. Dheer, King of Prussia, and William H. McGregor, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 15, 1978, Ser. No. 886,979

Int. Cl.[2] **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **5 Claims**

1. A polypeptide of the formula:



in which

R is hydrogen, methyl, allyl or cyclopropylmethyl; and

R^2 is $-NH_2$ or $-NHC_nH_{2n+1}$ where n is 1,2,3, or 4 or a pharmaceutically acceptable salt thereof.

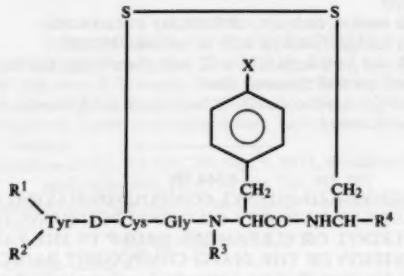
4,148,786

ANALGESIC POLYPEPTIDE

Dimitrois Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jun. 26, 1978, Ser. No. 918,753
Int. Cl.[2] C07C *103/52;* A61K *37/00*
U.S. Cl. 260—112.5 R 9 Claims

1. A polypeptide of the formula:



in which

R^1 is hydrogen, lower alkyl, allyl, 2-isopentenyl, 3-isopentenyl, cyclopropylmethyl, cyclobutylmethyl, phenethyl or arginyl;

R^2 is hydrogen or lower alkyl;

R^3 is hydrogen or lower alkyl;

R^4 is hydrogen, hydroxymethyl, carbo(lower)alkoxy, carbamyl or carboxy; and

X is hydrogen, chloro, fluoro, bromo or iodo;

the linear precursors thereof or a pharmaceutically acceptable salt thereof.

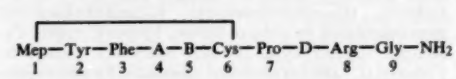
4,148,787

ANTIDIURETICALLY EFFECTIVE POLYPEPTIDE AND A PROCESS FOR PREPARING THE SAME

Jan L. Mulder, deceased, late of Malmo, Sweden (by Anneliese Mulder, executrix), and Lars A. I. Carlsson, Malmo, Sweden, assignors to Ferring AB, Malmö, Sweden

Continuation-in-part of Ser. No. 799,834, May 23, 1977, abandoned. This application Nov. 8, 1977, Ser. No. 849,389
Claims priority, application Sweden, May 24, 1976, 7605853; Nov. 12, 1976, 7612667; United Kingdom, May 20, 1977, 21345/77; Belgium, May 24, 1977, 0177844; Fed. Rep. of Germany, May 24, 1977, 2723453; Japan, May 24, 1977, 52-59510
Int. Cl.[2] C07C *103/52;* C07G *7/00;* A61K *37/100*
U.S. Cl. 260—112.5 R 4 Claims

1. A desamino-D-arginine[8]-vasopressin derivative, wherein the derivative has the formula



in which Mep is 2-mercaptopropionyl and A and B are glutamine (Gln) or asparagine (Asn) and A is Gln only when B is Gln.

4,148,788

SYNTHESIS OF THYMOSIN α_1

Su-Sun Wang, Bloomfield, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 871,563, Jan. 23, 1978, which is a continuation-in-part of Ser. No. 789,898, Apr. 22, 1977, abandoned. This application Jun. 19, 1978, Ser. No. 917,059
Int. Cl.[2] C07C *103/52;* A61K *37/00*
U.S. Cl. 260—112.5 R 10 Claims

1. Ac-Ser(R^1)-Asp(OR^2)-Ala-Ala-Val-Asp(OR^2)-Thr(R^3)-Ser(R^1)-Ser(R^1)-Glu(OR^4)-Ile-Thr(R^3)-Thr(R^3)-Lys(R^5)-Asp(OR^2)-Leu-Lys(R^5)-Glu(OR^4)-Lys(R^5)-Lys(R^5)-Glu(OR^4)-Val-Val-Glu(OR^4)-Glu(OR^4)-Ala-Glu(OR^4)-Asn-OR^6 wherein Ac is acetyl; R^1 is a conventional protecting group for the hydroxyl group of the serine residue; R^2 is a conventional carboxyl protecting group; R^3 is a conventional protecting group for the hydroxyl group of threonine; R^4 is a conventional carboxyl protecting group; R^5 is a conventional ω-amino protecting group; and R^6 is a conventional carboxyl protecting group.

4,148,789

METHOD FOR OBTAINING CONCENTRATED PROTEINS FROM THE RAPE SEEDS, AND THE SET OF EQUIPMENT FOR EMBODYING THIS METHOD

Halina Kozłowska; Ryszard Zadernowski; Bożena Chodkowska-Lossow, all of Olsztyn; Kazimierz Bogaczyński, and Kazimierz Szebiotko, both of Poznań, all of Poland, assignors to Akademia Rolniczo-Techniczna, Olsztyn and Akademia Rolnicza, Poznan, both of, Poland

Filed Dec. 2, 1976, Ser. No. 746,725
Claims priority, application Poland, Dec. 2, 1975, 185191
Int. Cl.[2] A23J *1/14*
U.S. Cl. 260—123.5 6 Claims

1. A method for obtaining a protein concentrate from rape seeds comprising the steps of:

a. sorting rape seeds into at least two fractions of unified size;

b. subjecting the seeds to water extraction and inactivation of mirosinase in water of pH 8.0 to 9.5;

c. removing seed-leaves from the seeds;

d. washing the seed-leaves and seeds with water in an amount of from about 3 to about 10 times the weight of the seeds;

e. drying the seed-leaves and seeds to a moisture content of from about 7% to about 15%;

f. removing hulls from the seeds and separating the seed-leaves and seeds from the hulls;

g. deoiling the seeds and seed-leaves to form a protein concentrate.

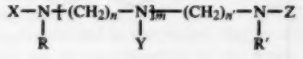
4,148,790

METALLIZED TRIAZINE REACTIVE DYES

Yoshihisa Sueda, Toyonaka; Suketsugu Koumura, Ibaragi; Kazuyoshi Hirabayashi, Ikeda; Hirohito Kenmochi, Takatsuki; Hisashige Terao, Toyonaka, and Yoshio Mori, Ibaragi, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Division of Ser. No. 471,986, May 21, 1974, Pat. No. 4,038,267. This application Apr. 18, 1977, Ser. No. 788,444
Claims priority, application Japan, May 24, 1973, 48-58829
Int. Cl.[2] C09B *45/48, 62/08*
U.S. Cl. 260—146 T 6 Claims

1. A compound of the formula

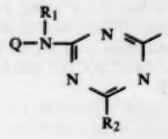


wherein

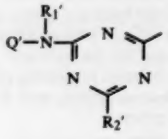
R and R′ each are hydrogen, C_1–C_4 alkyl or C_1–C_4 hydroxyalkyl,

m is an integer from 1 to 6,

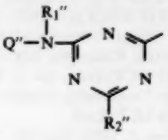
n and n' are each an integer from 2 to 4, and when m is 2 or more, n may be the same or different between 2 and 4,
X is hydrogen or a group of the formula



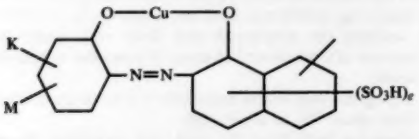
Y is hydrogen or a group of the formula



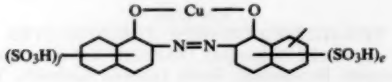
and
Z is hydrogen or a group of the formula



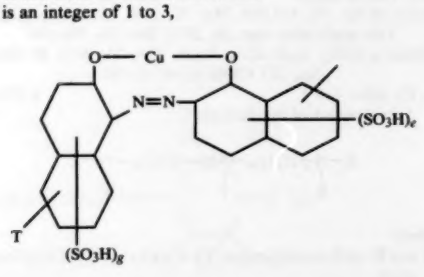
wherein
R_1, R_1', and R_1'' each are hydrogen or C_1–C_4 alkyl,
R_2, R_2', and R_2'' each are halogen, and
Q, Q', and Q'' each are dye residues and are independently one member selected from the group consisting of members of the formulae as a free acid form



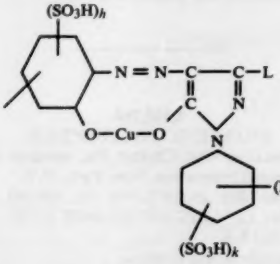
K and M are each hydrogen, halogen, methyl, methoxy, ethoxy, carboxyl, sulfo or aryl azo group, and
e is 1 or 2,



wherein
e is the same as defined above and
f is an integer of 1 to 3,



wherein
e is the same as defined above,
T is hydrogen, halogen or nitro, and
g is 0, 1 or 2, and



wherein
L is methyl, carboxyl, carboalkoxy or carbamide,
P is halogen, methyl, sulfo or sulfoamido, and
h, k and j are each 0, 1, or 2, with the proviso that h and k are not 0 at the same time,
with the proviso that X, Y, and Z are not hydrogen at the same time.

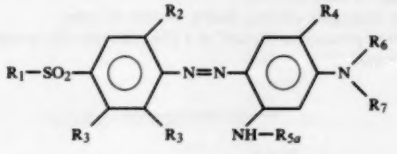
4,148,791

PHENYL-AZO-PHENYL COMPOUNDS HAVING AT LEAST ONE HYDROXY OR OXO SUBSTITUENT ON A SULFINYL OR SULFAMOYL GROUP IN THE PARA POSITION OF THE DIAZO COMPONENT RADICAL

Ruedi Altermatt, Buckten, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

Continuation-in-part of Ser. No. 700,835, Jun. 29, 1976, abandoned. This application Sep. 6, 1977, Ser. No. 830,414
Claims priority, application Switzerland, Jul. 4, 1975, 8744/75
Int. Cl.[2] C09B *29/08, 29/26*
U.S. Cl. 260—207.1 **33 Claims**

1. A compound of the formula



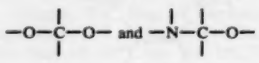
wherein
R_1 is $-CH_2CH_2OH$, $-CH_2CHOHCH_2OH$, $-CH_2COCH_3$, $-CH_2COC_6H_5$, $-CH_2COC_6H_4Br$ or $-NR_8R_9$, wherein
R_8 is C_2-$_3$hydroxyalkyl, and
R_9 is hydrogen, C_1-$_4$alkyl, C_2-$_3$hydroxyalkyl or cyano(C_1-$_2$alkyl),
R_2 is halo,
R_3 is hydrogen or halo,
R_3' is hydrogen or halo, with the proviso that at least one of R_3 and R_3' is hydrogen,
R_4 is hydrogen, chloro, bromo, methyl, methoxy or ethoxy,
R_{5a} is formyl; (C_1-$_4$alkyl)carbonyl; (C_1-$_4$alkyl)carbonyl monosubstituted by chloro, bromo, hydroxy, cyano, C_1-$_4$alkoxy, (C_1-$_2$alkoxy)-C_2-$_4$ alkoxy, benzyloxy, phenyl or phenoxy; (C_1-$_4$alkyl)carbonyl substituted by two substituents selected from the group consisting of chloro, bromo and hydroxy; (C_1-$_4$alkoxy)carbonyl; (C_1-$_4$alkoxy)carbonyl monosubstituted by chloro, bromo, hydroxy, cyano, C_1-$_4$alkoxy, (C_1-$_2$alkoxy)C_2-$_4$alkoxy, benzyloxy, phenyl or phenoxy; (C_1-$_4$alkoxy)carbonyl substituted by two substituents selected from the group consisting of chloro, bromo and hydroxy; benzoyl; (C_1-$_2$alkyl)benzoyl; phenoxycarbonyl; (C_2-$_4$alkenyl)oxycarbonyl; trifluoroacetyl; (C_5-$_7$cycloalkyl)oxycarbonyl; (C_1-$_4$alkyl)(C_5-$_7$cycloalkyl)oxycar-

bonyl; dioxanylmethoxycarbonyl; (C_{2-4}alkenyl)carbonyl or C_{1-4}alkylsulfonyl,

R_6 is C_{1-4}alkyl or C_{2-4}alkenyl, and

R_7 is C_{1-4}alkyl, C_{2-4}alkenyl or phenyl(C_{1-2}alkyl),

with the proviso that the molecule is free of



radicals.

4,148,792

PURIFICATION OF CAPROLACTAM

Harry Danziger; Otto Immel; Bernd-Ulrich Kaiser, all of Krefeld, Fed. Rep. of Germany; Guido Rampart, Ekeren, Belgium, and Hans-Helmut Schwarz, Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 831,789, Sep. 9, 1977, abandoned. This application Jun. 15, 1978, Ser. No. 915,732

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641478

Int. Cl.[2] C07D *201/16*

U.S. Cl. 260—239.3 A **4 Claims**

1. A process for the purification of ε-caprolactam obtained from crude caprolactam of the gaseous-phase rearrangement of cyclohexanone oxime or produced by Beckmann's rearrangement which comprises treating said crude caprolactam with potassium permanganate in the presence of from 0.01 to 5% by weight of water, based on the ε-caprolactam, and subsequently crystallizing ε-caprolactam from toluene, benzene, ethylbenzene or xylene.

4,148,793

PROCESS FOR THE PURIFICATION OF EPSILON-CAPROLACTAM

Harry Danziger, Krefeld; Ludwig Deibele, Cologne, and Bernd-Ulrich Kaiser, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 9, 1977, Ser. No. 832,002

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641454

Int. Cl.[2] C07D *201/16*

U.S. Cl. 260—239.3 A **1 Claim**

1. A process for removing solvent present in ε-caprolactam in an amount of 0.1 to 10% by weight which comprises removing solvent from said solvent containing ε-caprolactam in a first stage distillation at a pressure of from 100 to 760 Torr in the presence of about 0.5 to 3 parts by weight of water per part by weight of solvent initially present in said ε-caprolactam until the resulting undistilled ε-caprolactam in the sump has a solvent content of less than 0.1% by weight and a water content of 0.5 to 6% by weight and then subjecting the undistilled ε-caprolactam mixture of said first stage to a second stage water and solvent distillation at a pressure of from 10 to about 100 Torr whereby additional water and solvent are removed, and recovering from the distillation sump pure undistilled ε-caprolactam.

4,148,794

LOWER-ALKYL 3-R_5CO-OCTAHYDRO-2,5-METHANOBENZO[g]QUINOLINE-3-CARBOXYLATES

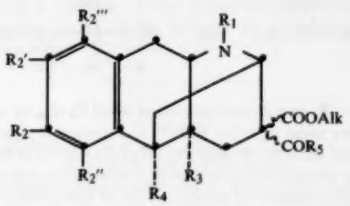
Thomas R. Lewis, Bethlehem, and William F. Michne, Poestenkill, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 818,713, Jul. 25, 1977, Pat. No. 4,119,628, which is a continuation-in-part of Ser. No. 785,746, Apr. 8, 1977, abandoned, which is a division of Ser. No. 725,371, Sep. 22, 1976, abandoned. This application Feb. 16, 1978, Ser. No. 878,308

Int. Cl.[2] C07D *215/48*

U.S. Cl. 546—74 **34 Claims**

1. A compound having the formula:



where

R_1 is hydrogen; lower-alkyl; lower-alkenyl; lower-alkynyl; halo-lower-alkenyl; lower-cycloalkyl; lower-cycloalkyl-lower-alkyl; 2- or 3-furylmethyl; or such 2- or 3-furylmethyl substituted on the ring carbon atoms by from one to three methyl groups; phenyl-lower-alkyl; or phenyl-lower-alkyl substituted in the phenyl ring by methylenedioxy or from one to two members of the group consisting of halogen, lower-alkyl, hydroxy, lower-alkanoyloxy, lower-alkoxy, lower-alkylmercapto, trifluoromethyl, amino and lower-alkanoylamino;

R_2, R_2', R_2'' and R_2''' are each hydrogen, or three of them are hydrogen and the fourth is halogen, lower-alkyl, hydroxy, lower-alkanoyloxy, lower-alkoxy, lower-alkylmercapto, trifluoromethyl, nitro, amino, lower-alkanoylamino, lower-alkoxycarbonylamino or phenyl, or two of the adjacent such groups together are methylenedioxy;

R_3 is hydrogen or lower-alkyl;

R_4 is hydrogen, lower-alkyl, lower-alkoxy-lower-alkyl, hydroxy-lower-alkyl, lower-alkylthio-lower-alkyl, lower-alkyl-sulfinyl-lower-alkyl, phenylthio-lower-alkyl, phenyl-sulfinyl-lower-alkyl, lower-alkenyl or halo-lower-alkyl, or R_3 and R_4 together are divalent lower-alkylene, $-(CH_2)_n-$, where n is one of the integers 3 or 4;

R_5 is lower-alkyl; lower-alkylthio-lower-alkyl; lower-alkoxy-lower-alkyl; lower-alkoxy; lower-cycloalkyl; lower-cycloalkyl-lower-alkyl; 2- or 3-furyl; 2- or 3-furyl-$(CH_2)_m$, where m is an integer from 2 to 4; or such 2- or 3-furyl or 2- or 3-furyl-$(CH_2)_m$ substituted on the unsubstituted ring carbon atoms by from one to three methyl groups; phenyl; phenyl-$(CH_2)_m$; or phenyl or phenyl-$(CH_2)_m$ substituted in the phenyl ring by methylenedioxy or from one to two members of the group consisting of halogen, lower-alkyl, hydroxy, lower-alkanoyloxy, lower-alkoxy, lower-alkylmercapto, trifluoromethyl, amino and lower-alkanoylamino; and

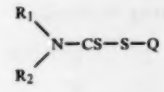
Alk is lower-alkyl.

4,148,795
DITHIOCARBAMATE ESTER BACTERICIDES AND FUNGICIDES

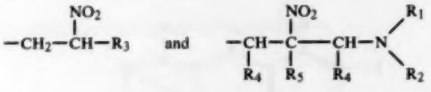
Thomas A. Lies, Montgomery Township, Mercer County, and James W. Clapp, Princeton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 567,664, Apr. 14, 1975, Pat. No. 4,011,230, which is a division of Ser. No. 323,169, Jan. 12, 1973, abandoned, which is a division of Ser. No. 127,825, Mar. 24, 1971, Pat. No. 3,723,494. This application Dec. 7, 1976, Ser. No. 748,356
Int. Cl.[2] C07D *401/12, 295/14;* C07C *155/08*
U.S. Cl. 546—189 6 Claims

1. A compound having the structure



wherein Q represents a member selected from the group consisting of



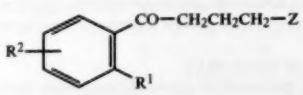
and where R_1 and R_2 are each lower alkyl C_1–C_4, or where R_1 and R_2 are taken together with N to represent a piperidine or pyrrolidine nucleus; R_3 is lower alkyl C_1–C_3; R_4 is hydrogen, phenyl or phenyl having one or two substituents selected from the group consisting of methyl, ethyl, m-nitro, halo, methoxy and ethoxy; and R_5 is hydrogen or lower alkyl C_1–C_4.

4,148,796
γ-PIPERIDINOBUTYROPHENONES

Hisao Yamamoto, Nishinomiya; Masaru Nakao; Kikuo Sasajima, both of Toyonaka; Isamu Maruyama, Minoo, and Shigenari Katayama, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 124,522, Mar. 15, 1971, Pat. No. 3,799,932. This application Aug. 15, 1973, Ser. No. 388,561
The portion of the term of this patent subsequent to Mar. 26, 1991, has been disclaimed.
Int. Cl.[2] C07D *401/04, 211/50*
U.S. Cl. 546—199 15 Claims

1. A compound of the formula,

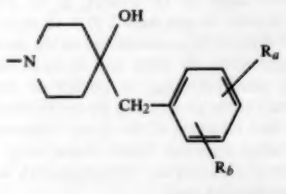


wherein

R^1 is halogen, amino, C_1–C_5 alkanoylamino, C_1–C_4 alkylamino or N-(C_1–C_5-alkanoyl)C_1–C_4 alkylamino;

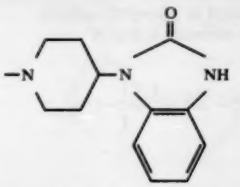
R^2 is hydrogen or halogen, provided that when R^1 is halogen, R^2 must be halogen; and

Z is a piperidino group having the formula (A'),



(A')

(wherein each of R_a and R_b is hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy or trifluoromethyl) or a piperidino group having the formula (B')



(B'),

provided that when R^1 is amino and R^2 is hydrogen, Z cannot be represented by the formula (A'), and a pharmaceutically acceptable acid addition salt thereof,.

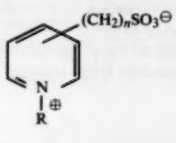
12. γ-[4-(2-Oxo-1-benzimidazolinyl)piperidino]-2-acetamino-4-fluorobutyrophenone.

4,148,797
(N-SUBSTITUTED PYRIDYL)-ALKYL SULFONIC ACID BETAINES AS ELECTROPLATING ADDITIVES

Kurt Plüss, and Bruno R. DeMartin, both of Schaffhausen, Switzerland, assignors to Cilag-Chemie A.G., Schaffhausen, Switzerland

Division of Ser. No. 816,104, Jul. 15, 1977, which is a division of Ser. No. 763,452, Jan. 27, 1977, Pat. No. 4,067,785, which is a continuation-in-part of Ser. No. 666,525, Jan. 12, 1976, abandoned. This application Jun. 15, 1978, Ser. No. 916,015
Int. Cl.[2] C07D *213/82*
U.S. Cl. 546—344 3 Claims

1. A pyridyl alkyl sulfonic acid betaine having the formula:



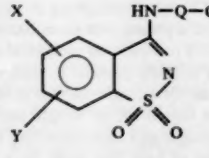
in which the substituent $-(CH_2)_nSO_3^{\ominus}$ is in the 2- or 4-position of the pyridyl ring; n is the integer 1 or 2; and R is a member selected from the group consisting of $CH_2(CH_2)_xCH_2SO_3Na$ wherein x is the integer 1 or 2; sodium 2-hydroxypropylsulfonate; sodium 2-hydroxybutylsulfonate; and sodium 3-hydroxybutylsulfonate.

4,148,798
[(1,1-DIOXO-1,2-BENZISOTHIAZOL-3-YL)AMINO]ALKANOIC ACIDS AND ESTERS THEREOF

Peter C. Wade, Pennington, N.J., and B. Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 3, 1978, Ser. No. 875,022
Int. Cl.[2] C07D *275/06*
U.S. Cl. 260—301 9 Claims

1. A compound of the formula



wherein

R is hydrogen or lower alkyl;

Q is lower alkylene, cyclopentyl or cyclohexyl;

X is hydrogen, halogen, lower alkyl, lower alkoxy or nitro;

Y is hydrogen, lower alkoxy or halogen, X being the same as Y when Y is other than hydrogen; and basic salts thereof.

4,148,799

PROCESS FOR THE PREPARATION OF 2-ARYLIMINOTHIAZOLINE SOLUTIONS

Edgar Enders, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

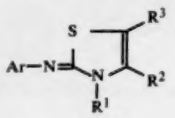
Filed May 17, 1977, Ser. No. 797,728

Claims priority, application Fed. Rep. of Germany, May 21, 1976, 2622949

Int. Cl.[2] C07D 277/42

U.S. Cl. 260—306.7 T **5 Claims**

1. Process for the preparation of solutions containing, in a yield of at least 90%, 2-aryliminothiazolines of the formula



I

in which

Ar represents phenyl or naphthyl which is unsubstituted or substituted by alkyl (C_1–C_4), halogen, trifluoromethyl, amino, dialkylamino (C_1–C_4) per alkyl group, alkanoylamino (C_1–C_4) and alkoxycarbonylamino (C_1–C_4), cycloalkyl (C_3–C_6), alkoxy (C_1–C_4), phenyl, phenoxy, alkylsulphonyl (C_1–C_4), nitro, cyano, or alkanoyl (C_1–C_4) or a combination of said substituents and

R^1, R^2 and R^3 independently of one another represent hydrogen or alkyl (C_1–C_4),

which comprises reacting

(a) either an arylamine of the formula

$Ar\text{-}NH_2$

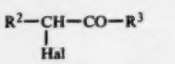
in which

Ar has the meaning indicated above with a compound of the formula

$R^1\text{-}NCS$

in which

R^1 represents hydrogen or alkyl (C_1–C_4), then reacting the thiourea intermediate product formed, without isolation, with a halogenocarbonyl compound of the formula



III

in which

R^2 and R^3 have the meaning indicated above and

Hal represents halogen, or with an acetal of the abovementioned 2-halogenocarbonyl compound III, in an aromatic solvent or mixture of solvents of the benzene or naphthalene series, the boiling range of which is between 130° and 400° C., at a temperature between about 20° and about 120° C. and then separating the aqueous phase from the reaction mixture to provide a solution of the 2-aryliminothiazoline in the aromatic solvent of the benzene or naphthalene series (boiling range 130° to 400° C.), or which comprises reacting

(b) an aryl isocyanate of the formula

$Ar\text{-}NCS$

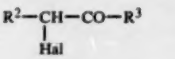
in which

Ar has the meaning indicated above, with a compound of the formula

$R^1\text{-}NH_2$

in which

R^1 represents hydrogen or alkyl (C_1–C_4), then reacting the thiourea intermediate product formed, without isolation, with a halogenocarbonyl compound of the formula



III

in which

R^2 and R^3 have the meaning indicated above and

Hal represents halogen, or with an acetal of the abovementioned 2-halogenocarbonyl compound III, in an aromatic solvent of the benzene or naphthalene series, the boiling range of which is between 130° and 400° C., at temperatures between about 20° and about 120° C. and then separating the aqueous phase from the reaction mixture to provide a solution of the 2-aryliminothiazoline in the aromatic solvent of the benzene or naphthalene series (boiling range 130° to 400° C.).

4,148,800

PROCESS FOR THE PRODUCTION OF THIAZOLINE-2-THIONES

Rüdiger Schubart, Bergisch-Gladbach, and Ulrich Eholzer, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 5, 1978, Ser. No. 867,049

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1977, 2701215

Int. Cl.[2] C07D 277/04

U.S. Cl. 260—306.7 R **4 Claims**

1. In a one-pot process for the production of thiazoline-2-thiones the improvement comprises the steps of

(a) reacting an aminoethanol with thionyl chloride in an inert solvent at 0° to 40° C.,

(b) heating the reaction product to 40° to 100° C. until evolution of SO_2 ceases, and

(c) adding water and reacting the product from step b) with carbon disulfide in the presence of basic compounds at 0° to 120° C.

4,148,801

3-[(CHLOROPHENYLSULFONYL)METHYL]-1,2,4-OXADIAZOLE-5-CARBOXYLIC ACID DERIVATIVES

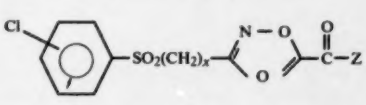
Arthur A. Santilli, Havertown, and Robert L. Morris, Devon, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,293

Int. Cl.[2] C07D 271/06

U.S. Cl. 260—307 G **11 Claims**

1. A compound represented by the formula:



wherein

X = 1 or 2;

Z is —OR, —OH, —OK, —ONa, —NHOH, —$NHNH_2$, —$NHNHCOCO_2R$, or —$NHNHSO_2R$; and

R is —CH_3, —CH_2CH_3, —$CH_2CH_2CH_3$ or —$CH(CH_3)_2$.

4,148,802

METHOD OF PREPARING ALPHA-VINYLOXAZOLINES

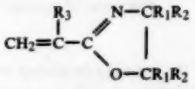
Lewis W. Watts, Jr., and Ernest L. Yeakey, both of Austin, Tex., assignors to Texaco Development Corp., White Plains, N.Y.

Continuation-in-part of Ser. No. 723,421, Sep. 15, 1976, abandoned. This application Apr. 3, 1978, Ser. No. 892,521

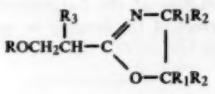
Int. Cl.[2] C07D *263/12*

U.S. Cl. 260—307 F 6 Claims

1. A method of preparing an alpha-vinyloxazoline having the structural formula:



where R_1, and R_2 individually represent hydrogen, methyl or ethyl radicals and R_3 is hydrogen or a C_1–C_4 lower alkyl radical which comprises the step of providing an oxazoline ether compound having the structural formula:



where R is C_1–C_4 lower alkyl and R_1, R_2 and R_3 are as stated above and treating said oxazoline ether compound with a strong base selected from the group consisting of alkali metal hydrides, alkoxides containing 1–4 carbon atoms and hydroxides at a temperature ranging from about 0° C. to about 220° C. to provide said alpha-vinyloxazoline.

4,148,803

NITROSAMINE REACTION PRODUCTS FOR CONTROLLING THE GROWTH OF BACTERIA AND FUNGI

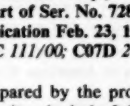
Herbert L. Wehrmeister, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Northbrook, Ill.

Continuation-in-part of Ser. No. 728,695, Oct. 1, 1976, abandoned. This application Feb. 23, 1978, Ser. No. 880,687

Int. Cl.[2] C07C *111/00*; C07D *249/04, 249/06*

U.S. Cl. 260—308 A 17 Claims

1. The product prepared by the process consisting of the steps of (a) reacting a nitroalcohol of the formula



where R and R^1 can be hydrogen, methyl, ethyl or hydroxymethyl in about a 1:1 mole ratio with an amine represented by the formula R^2NH_2 where R^2 is alkyl of from 1 to 4 or more carbon atoms or phenyl, benzyl, toluyl or xylyl at about 50°–70° thereby effecting formation of a nitroamine; (b) reacting the nitroamine with nitrous acid at about 0°–5°, thereby forming a nitroso compound, and (c) reducing the nitroso compound.

4,148,804

2-DESCARBOXY-2-(TETRAZOL-5-YL) 11-DESOXY-15-THIAPROSTAGLANDINS

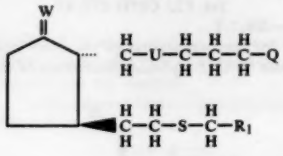
Jacob J. Plattner, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 868,503, Jan. 11, 1978, which is a division of Ser. No. 740,381, Nov. 10, 1976, Pat. No. 4,092,349. This application Jun. 28, 1978, Ser. No. 919,849

Int. Cl.[2] C07D *257/04*

U.S. Cl. 260—308 D 2 Claims

1. An optically active compound of the formula



and the enantiomer and racemate thereof wherein:

Q is tetrazol-5-yl;

U is ethylene;

W is ..OH or oxygen;

R_1 is selected from the group consisting of phenyl and monosubstituted phenyl, said substituent being selected from the group consisting of fluoro, chloro, methyl, methoxy and trifluoromethyl;

R_2 is selected from the group consisting of hydrogen and alkyl having one to four carbon atoms;

R_3 is selected from the group consisting of alkyl having from one to four carbon atoms and phenyl;

and the pharmaceutically acceptable alkali, alkaline earth and ammonium salts of said compound.

4,148,805

NAPHTHOLACTAM DYESTUFFS

Hansrudolf Schwander, Riehen, and Christian Zickendraht, Binningen, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

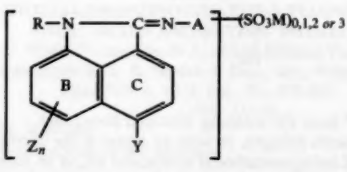
Filed May 6, 1977, Ser. No. 794,485

Claims priority, application Switzerland, Jun. 1, 1976, 6859/76

Int. Cl.[2] C07D *209/90*

U.S. Cl. 260—326.27 4 Claims

1. A dyestuff of the formula (I)



(I)

in which R represents C_1–C_4-alkyl, C_1–C_5-alkenyl, C_4–C_9-cycloalkyl, C_7–C_9-phenyl-alkyl, phenyl or hydrogen, M represents hydrogen or a cation, Y represents a free carboxyl group or a C_1–C_4-alkyl ester thereof, Z is C_1–C_4-alkyl, C_1–C_4-alkoxy, Cl, Br, NO_2, phenylsulphonyl, C_1–C_4-alkyl-S-, C_1–C_4-alkylsulphonyl, cyano, $CONH_2$, CONH-C_1–C_4-alkyl, and CON(C_1–C_4-alkyl)$_2$, n represents 0, 1 or 2, A represents unsubstituted phenyl or phenyl substituted by 1 to 2 nitro, cyano or halogen atoms and B and C can carry further nonionic substituents selected from the group consisting of alkyl with 1 to 4 carbon atoms, alkoxy with 1 to 4 carbon atoms, halogen, alkylmercapto and alkylsulphonyl which have 1 to 4 carbon atoms

in the alkyl portion, phenylsulphonyl, benzylsulphonyl, C_1–C_4-alkylcarbonylamino, and C_1–C_4-alkylsulphonylamino.

4,148,806

PROCESS FOR THE PREPARATION OF INDOLOPYRONES

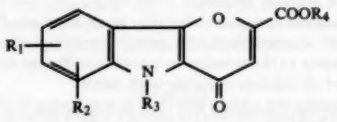
Richard E. Brown, Hanover; Paul C. Unangst, Hackettstown; Frank Fontsere, Andover, and Arthur C. Fabian, Flanders, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 764,110, Jan. 31, 1977, abandoned. This application Dec. 14, 1977, Ser. No. 860,504

Int. Cl.² C07D *491/04*

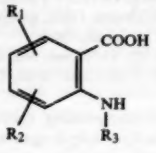
U.S. Cl. 260—326.29 **1 Claim**

1. A process for preparing a compound of the formula:

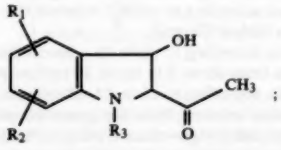


wherein R_1 and R_2 may be hydrogen, hydroxy, lower alkoxy or lower alkyl of 1–6 carbon atoms, halogen, trifluoromethyl, or, taken together, methylenedioxy; R_3 may be hydrogen, lower alkyl of 1–6 carbon atoms, phenyl methyl or phenyl; and R_4 may be hydrogen or lower alkyl of 1–6 carbon atoms, comprising the steps of:

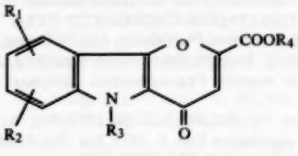
A. Reacting a substituted anthranilic acid of the formula:



with chloracetone in the presence of a base and a hydroxylic solvent to obtain a compound of the structure:

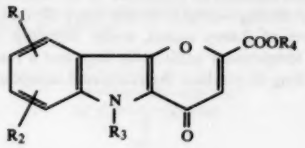


B. Reacting the compound so obtained with a lower alkyl ester of oxalic acid in the presence of a strong base to obtain a compound of the structure:



wherein R_4 is a lower alkyl of 1–6 carbon atoms; and

C. Reacting the ester so obtained with aqueous strong base followed by strong acid or with aqueous strong acid alone to obtain the desired compound:



wherein R_4 is hydrogen.

4,148,807

2-OXABICYCLO[3.2.1]OCTAN-3-ONES

Peter Funfschilling, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

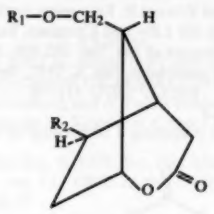
Division of Ser. No. 765,560, Feb. 4, 1977, Pat. No. 4,079,065. This application Dec. 2, 1977, Ser. No. 856,616

Claims priority, application Switzerland, Feb. 11, 1976, 1650/76

Int. Cl.² C07D *311/00*

U.S. Cl. 260—343.21 **4 Claims**

1. A compound of the formula



wherein R_1 is an acid protecting group which is stable at a pH which is more acidic than pH [2 and R_2 is a leaving group capable of leaving under aqueous acidic conditions.

4,148,808

METHOD FOR REDUCING ZEARALENONE

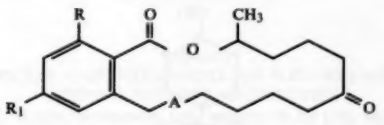
Edward B. Hodge, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Libertyville, Ill.

Filed Aug. 22, 1975, Ser. No. 606,856

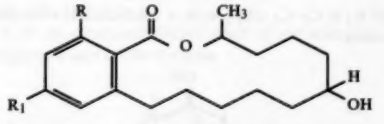
Int. Cl.² C07D *313/00*

U.S. Cl. 260—343.41 **24 Claims**

1. A method for reducing a zearalenone compound of the formula



to a zearalanol compound of the formula



wherein A is a single bond or a double bond, and R and R_1 may be the same as or different from each other and are each selected from the group consisting of hydrogen, hydroxy, lower alkoxy of from 1 to about 6 carbon atoms, alkanoyloxy of from 1 to about 6 carbon atoms, and arylalkoxy, wherein the alkoxy portion has 1 to about 5 carbon atoms and the aryl portion has about 6 to 8 carbon atoms, which comprises heating a reaction

mixture which includes an admixture of the zearalenone compound and reducing amounts of isopropyl alcohol, and catalytic amounts of Raney nickel, under reducing conditions, including a temperature sufficiently high and a reaction time sufficiently long to produce the zearalanol compound.

4,148,809

PROCESS FOR PREPARING DL-CIS-1-HYDROXY-3-SUBSTITUTED-6,6-DIMETHYL-6,6A,7,8,10,10A-HEXAHYDRO-9H-DIBENZO[B,D]PYRAN-9-ONES

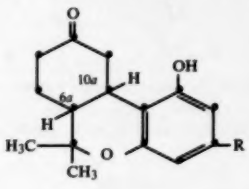
William A. Day, and Edward R. Lavagnino, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 702,809, Jul. 6, 1976, abandoned. This application Sep. 8, 1977, Ser. No. 831,453

Int. Cl.[2] C07D *311/78*

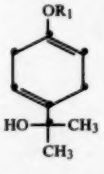
U.S. Cl. 260—345.3 **10 Claims**

1. A process for preparing a compound of the formula

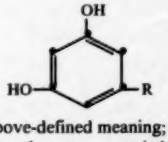


wherein:

R is C_5–C_{10} alkyl, C_5–C_{10} alkenyl, C_5–C_8 cycloalkyl, or C_5–C_8 cycloalkenyl; and wherein the hydrogen atoms attached at the 6a and the 10a positions are oriented cis to one another; which comprises reacting approximately equimolar quantities of a 1-alkoxy-4-(1-hydroxy-1-methylethyl)-1,4-cyclohexadiene of the formula



wherein R_1 is C_1–C_4 alkyl, with a 5-substituted resorcinol of the formula



wherein R has the above-defined meaning; in the presence of a catalyst selected from the group consisting of boron tribromide, boron trifluoride, and stannic chloride, in an organic solvent at a temperature ranging from about −30° C. to about 100° C.

4,148,810

PROCESS FOR ISOLATING STEROLS FROM FAT PROCESSING RESIDUES

Alfred Struve, Hilden, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Dec. 6, 1977, Ser. No. 857,898

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1976, 2656208

Int. Cl.[2] C07J *9/00*

U.S. Cl. 260—397.25 **6 Claims**

1. A method for isolating sterols from the distillation residue of fat processing, comprising

(a) transesterifying a distillation residue with a sufficient amount of methanol at temperatures of 180°–240° C. to liberate the sterols,

(b) separating the transesterified residue containing sterol from the methanol,

(c) dissolving the transesterified residue in an aprotic solvent selected from the group consisting of ligroin, toluene, diethylketone, ethyl acetate and 1,2-dichloroethane to form a solution thereof,

(d) adding calcium chloride and a small amount of a protic solvent selected from the group consisting of methanol and water to the solution in amounts sufficient to form an adduct of calcium chloride with sterol,

(e) separating the adduct and then decomposing it to the free sterol, and

(f) recovering the sterol,

wherein in step (d) the weight ratio of sterol to calcium chloride for adduct formation is 1:0.5 to 1:2, the weight ratio of calcium chloride to methanol is from 3:1 to 1:2 and the weight ratio of calcium chloride to water is from 4:1 to 3:2.

4,148,811

HALOGENATION PROCESS

Robert J. Crawford, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 12, 1977, Ser. No. 814,963

Int. Cl.[2] C09F *7/00*; C11C *3/00*; C07C *51/00*

U.S. Cl. 260—408 **17 Claims**

1. A process for α-halogenating carboxylate compounds having at least one reactive α-hydrogen substituent, comprising contacting said carboxylate compounds with a halogen or halogen source in the presence of an effective amount of a mixture of a cyanoquinone material and an acidic auxiliary agent at a temperature of about 70° C., or greater.

10. A process according to claim 1 wherein the carboxylate compound is a carboxylic acid.

11. A process according to claim 10 wherein the carboxylic acid comprises from about 2 to about 30 carbon atoms.

12. A process according to claim 11 wherein the carboxylic acid is a member selected from the group consisting of the branched-chain and straight-chain C_3–C_{18} carboxylic acids.

13. A process according to claim 12 wherein the carboxylic acid is selected from the C_6–C_{18} carboxylic acids.

4,148,812

METHOD OF MAKING BASIC ZIRCONIUM-AMINO-ACID GELS

Andrew M. Rubino, New Providence; John L. Jones, Watchung, and Edward S. Bretschneider, North Plainfield, all of N.J., assignors to Armour Pharmaceutical Company, Scottsdale, Ariz.

Division of Ser. No. 562,300, Mar. 26, 1975, Pat. No. 4,028,390. This application Feb. 1, 1977, Ser. No. 764,627

Int. Cl.[2] C07F *7/00*

U.S. Cl. 260—429.3 **7 Claims**

1. A method of preparing basic zirconium-amino acid gels consisting essentially of reacting in aqueous medium a water soluble salt of an amino acid and a water soluble zirconium salt

to form a precipitate, and recovering said precipitate which is said gel.

4,148,813

NICKEL AND COBALT SOLVENT EXTRACTION WITH MERCAPTIDES

Alkis S. Rappas, Bedford, and J. Paul Pemsler, Lexington, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Sep. 8, 1977, Ser. No. 831,501
Int. Cl.[2] C07F *15/04, 15/06*
U.S. Cl. 260—439 R **6 Claims**

1. A process for extracting metal values selected from the group consisting of nickel and cobalt from aqueous solutions containing ions of at least one of said metal values into an organic solvent, said process comprising the steps of:

providing an extractant comprising a solution of a water immiscible organic solvent containing mercaptide anions solubilized therein, said solvent being capable of solubilizing nickel and cobalt mercaptides; and,

contacting the aqueous solution with a pH not below 3.5 with the extractant for a sufficient amount of time to extract a portion of at least one of said metals from the aqueous solution into the organic solvent.

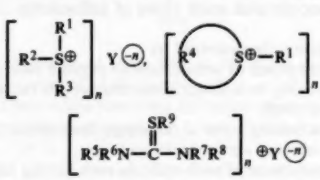
4,148,814

PROCESS FOR PREPARING MONOHYDROCARBYLTIN TRIHALIDES

Gerald H. Reifenberg, Hightstown, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 29, 1977, Ser. No. 828,579
Int. Cl.[2] C07F *7/22*
U.S. Cl. 260—429.7 **9 Claims**

1. The process of preparing monohydrocarbyltin trihalide by reacting SnX_4 with a member of the group consisting of R_4Sn, R_3SnX, and R_2SnX_2 in quantities substantially as shown in the equations $R_4Sn+3SnX_4 \rightarrow 4RSnX_3$, $R_3SnX+2SnX_4 \rightarrow 3RSnX_3$, $R_2SnX_2+SnX_4 \rightarrow 2RSnX_3$, while at a temperature within the range of about 150° C. to 250° C., and in the presence of one or more sulfonium or isothiuronium catalysts selected from the group consisting of the following:



wherein: X is bromide, chloride and iodide; R, R^1, R^2, R^3, R^5, R^6, R^7, R^8 and R^9 are hydrocarbyl radicals, of 1–24 carbon atoms; R^5, R^6, R^7, and R^8 can also be hydrogen; R^4 is a hydrocarbon linking group of 3–5 carbon atoms; n is the valence of the anion Y; and, Y is an anion.

4,148,815

AMINO-THIOL NICKEL AND COBALT SOLVENT EXTRACTION

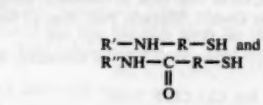
Alkis S. Rappas, Bedford, and J. Paul Pemsler, Lexington, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Sep. 8, 1977, Ser. No. 831,552
Int. Cl.[2] C07F *15/04, 15/06*
U.S. Cl. 260—439 R **6 Claims**

1. A process for extracting metal values selected from the group consisting of nickel and cobalt from aqueous solutions containing ions of at least one of said metal values into an organic solvent, said process comprising the steps of:

providing an extractant comprising a solution of an organic, water immiscible solvent containing a substantially water insoluble mercaptan selected from the group consisting of:

R'—NH—R—SH and



wherein R' is selected from the group consisting of hydrogen, alkyl groups containing between 1 and 20 carbon atoms, aryl substituted alkyl groups containing between 1 and 12 carbon atoms, and aryl groups substituted with a radical selected from the group consisting of hydrogen, halogen, aryl, and lower alkyl (C_1–C_6), and R is an alkyl group containing 1–10 carbon atoms; and,

contacting the aqueous solution with a pH not below 3.5 with the extractant for a sufficient amount of time to extract a portion of at least one of said metals from the aqueous solution into the organic solvent.

4,148,816

ALKALI METAL MERCAPTIDE SOLVENT EXTRACTION OF COBALT, NICKEL

Alkis S. Rappas, Bedford, and J. Paul Pemsler, Lexington, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Sep. 8, 1977, Ser. No. 831,553
Int. Cl.[2] C07F *15/04, 15/06*
U.S. Cl. 260—439 R **6 Claims**

1. A process for extracting metals selected from the group consisting of nickel and cobalt from aqueous solutions thereof, said process comprising the steps of:

providing an extractant comprising a solution of a substantially water insoluble alkali metal mercaptide selected from the group consisting of sodium mercaptide and potassium mercaptide solubilized in a water immiscible polar organic solvent capable of solubilizing alkali metal ions, and,

contacting the aqueous solution with a pH not below 6.0 with the extractant for a sufficient amount of time to extract a portion of at least one of said metals from the aqueous solution into the organic solvent.

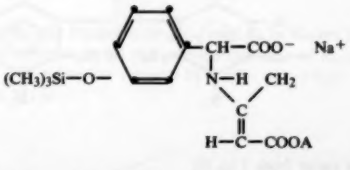
4,148,817

PROCESS AND INTERMEDIATES FOR PREPARING CEPHALOSPORIN ANTIBIOTICS

Ian G. Wright, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 25, 1976, Ser. No. 670,487
Int. Cl.[2] C07F *7/18*
U.S. Cl. 260—448.8 R **3 Claims**

1. A 3- or 4-(trimethyl)silyl ether of an amino-protected phenylglycine salt of the formula



wherein A is methyl or ethyl.

4,148,818
PROCESS FOR PREPARING DISILOXANES

Volker Frey, Burghausen; Horst Müller, Emmerting, and Rudolf Riedle, Burghausen, all of Fed. Rep. of Germany, assignors to Die Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,701

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741624

Int. Cl.[2] C07F 7/08

U.S. Cl. 260—448.2 E 4 Claims

1. A process for preparing disiloxanes of the formula $(CH_2{=}CHR_2Si)_2O$, which comprises reacting a compound of the formula $(CH_2{=}CHRClSi)_2O$ with a Grignard compound of the formula RMgX, where R is a monovalent hydrocarbon radical and X is selected from the class consisting of chlorine, bromine and iodine and thereafter recovering the disiloxane from the reaction medium.

4,148,819
ALIPHATIC DIISOCYANATES

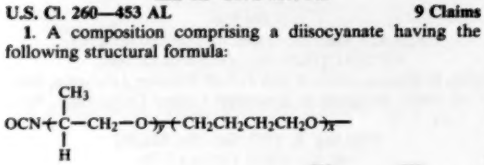
Lewis W. Watts, Jr., Austin; Clifford L. Lambert, Jr., Georgetown, and Edward T. Marquis, Austin, all of Tex., assignors to Texaco Development Corp., New York, N.Y.

Filed Apr. 3, 1978, Ser. No. 892,523

Int. Cl.[2] C07C 119/042

U.S. Cl. 260—453 AL 9 Claims

1. A composition comprising a diisocyanate having the following structural formula:



where x is an average number ranging from about 6 to 50, and y and z are average numbers ranging from about 1 to about 20, with the sum of y and z being from about 6 to about 40.

4,148,820
NOVEL PHENOL STABILIZERS

Samuel Evans, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

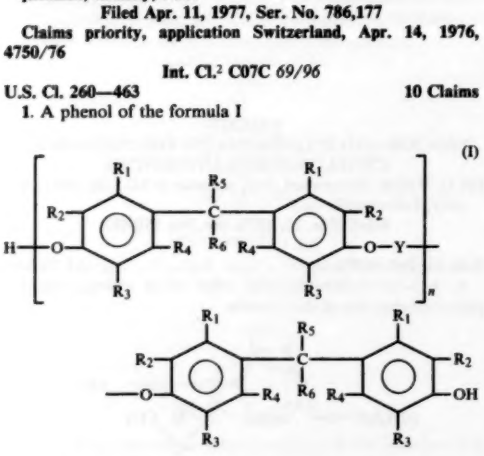
Filed Apr. 11, 1977, Ser. No. 786,177

Claims priority, application Switzerland, Apr. 14, 1976, 4750/76

Int. Cl.[2] C07C 69/96

U.S. Cl. 260—463 10 Claims

1. A phenol of the formula I



(I)

wherein

n has a value from 1 to 15,

each of R_1, R_2, R_3 and R_4 independently is a hydrogen atom, a C_1-C_{18}-alkyl group, an aryl group, a C_5-C_{12}-cycloalkyl group or a C_7-C_{13}-aralkyl group,

R_5 is a hydrogen atom or a C_1-C_{18}-alkyl group,

Y is carbonyl, and

R_6 is a radical —CHR_8—CHR_9—S—$CR_{10}R_{11}R_{12}$, wherein each of R_8 and R_9 independently is a hydrogen atom or a C_1-C_6-alkyl group, R_{10} is a hydrogen atom, a C_1-C_{19}-alkyl group, a C_2-C_4-alkenyl group or an aryl group, R_{11} is a hydrogen atom or a methyl group and R_{12} is a hydrogen atom or a methyl group, or, R_{11} is a hydrogen atom and R_{12} is a C_2-C_6-alkyl group, or, R_{10} is a hydrogen atom and R_{11} and R_{12} together with the carbon atom to which they are attached represent a cycloalkyl group, or R_{10}, R_{11} and R_{12} together with the carbon atom to which they are attached represent an aryl group.

4,148,821
PROCESS FOR SULFONATION

Marvin L. Nussbaum, Skokie, and Edward A. Knaggs, Deerfield, both of Ill., assignors to Stepan Chemical Company, Northfield, Ill.

Continuation-in-part of Ser. No. 515,013, Oct. 16, 1974, abandoned, which is a continuation-in-part of Ser. No. 432,439, Jan. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 9,065, Feb. 5, 1970, abandoned. This application Apr. 13, 1976, Ser. No. 676,470

Int. Cl.[2] C07C 143/24

U.S. Cl. 260—505 S 43 Claims

1. A process for the preparation of petroleum sulfonates comprising the step of intimately contacting from about 5 to 40 parts by weight of sulfur trioxide with each 100 parts by weight of a flowable liquid mixture which comprises on a 100 weight percent total mixture basis,

(A) from about 85 to 99.5 weight percent of a petroleum oil feed stock, and

(B) from about 0.5 to 15 weight percent of an additive, said petroleum oil stock being characterized by

(a_1) having an API gravity ranging from about 5° to 60° at 60° F.,

(a_2) having a boiling point (corrected atmospheric) ranging from about −20° to 1400° F., and

(a_3) containing from about 10 to 95 weight percent (100 weight percent total stock basis) of sulfonatable components,

said additive being characterized by

(b_1) being comprised of unsulfonatable organic radical portions possessing an average molecular weight range from about 55 to 6000,

(b_2) having a boiling point in the range from about 212° to 932° F. corrected atmospheric, and

(b_3) a preponderance of such radicals each having attached at least one proton replaceable by a sulfo group and at least one moiety selected from the group consisting of an aromatic nucleus, an olefinic carbon pair, and an oxygen atom directly bonded to a carbon atom by at least one bond, said contacting being conducted at a temperature of from about 77° to 392° F., said contacting being continued for a time at least sufficient to sulfonate at least about 10 weight percent of the total sulfonatable components present in said petroleum oil stock.

4,148,822
PROCESS FOR THE MANUFACTURE OF METHACRYLIC OR ACRYLIC ACID

Masanobu Ogawa, and Toshitake Kojima, both of Takasaki, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1976, Ser. No. 646,375

Claims priority, application Japan, Jan. 16, 1975, 50-6233

Int. Cl.[2] C07C 51/32, 57/04

U.S. Cl. 562—534 9 Claims

1. A process for the production of methacrylic or acrylic

acid by oxidizing methacrolein or acrolein with molecular oxygen in the presence of water vapor characterized in that the reaction system is provided with a catalyst which is a composition represented by the following formula:

$$Pd_aP_bSb_cO_d$$

in which suffixes a, b, c and d represent numbers of palladium, phosphorus, antimony and oxygen atoms, respectively, and wherein a is 1, b is 1 to 42, c is 0 to 15, and d is a number which is of itself determined by the total valences of the other elements and that a phosphoric acid or a phosphorus compound capable of forming a phosphoric acid through a chemical change during the reaction is concurrently supplied to the reaction system.

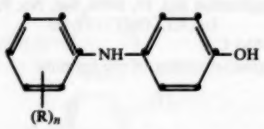
4,148,823

PROCESS FOR PREPARING p-ARYLAMINOPHENOLS WITH ALUMINUM SULFATE OR CARBOXYLATE

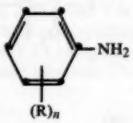
David R. Dubois, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,715
Int. Cl.[2] C07C *89/00*
U.S. Cl. 260—571 **3 Claims**

1. Process for the preparation of a p-arylaminophenol having the formula



which comprises reacting hydroquinone with a primary arylamine having the formula



at a temperature of about 170° to 220° C. in the presence of a catalytic amount of aluminum sulfate, or an aluminum lower carboxylate while removing the water of reaction in the form of an azeotrope, wherein R is lower alkyl or lower alkoxy and n is 0, 1 or 2.

4,148,824

MANUFACTURE OF 1-DISUBSTITUTED AMINOALK-2-YN-4-OLS

Herwig Hoffmann, Frankenthal; Heinz Graefje, Ludwigshafen; Wolfgang Koernig, Dossenheim, and Siegfried Winderl, Heidelberg-Wieblingen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 15, 1977, Ser. No. 824,523
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1976, 2637425
Int. Cl.[2] C07C *85/02*
U.S. Cl. 260—585 B **7 Claims**

1. A process for the manufacture of an N-disubstituted 1-aminoalk-2-yn-4-ol by reaction of an optionally 3-mono- or di-substituted 3-hydroxypropyne with formaldehyde and an aliphatic secondary amine in aqueous acid solution in the presence of a copper compound, in accordance with the Mannich reaction, wherein the reaction is carried out in the presence of a bromide or iodide which is soluble in the reaction mixture, or in the presence of iodine.

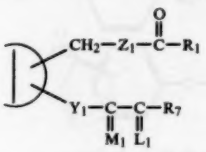
4,148,825

2-DECARBOXY-2-ALKYLCARBONYL-11-DEOXY-PGF COMPOUNDS

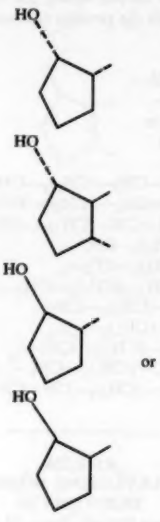
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 888,695, Mar. 21, 1978, Pat. No. 4,123,463. This application Jul. 17, 1978, Ser. No. 925,261
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—586 R **41 Claims**

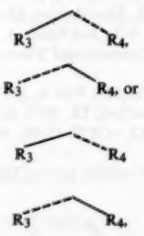
1. A prostaglandin analog of the formula



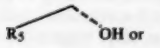
wherein D is



wherein R_1 is alkyl of one to 4 carbon atoms, inclusive; wherein L_1 is

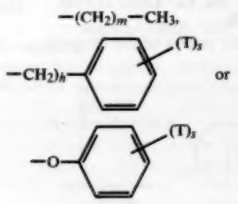


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl; wherein M_1 is



-continued

wherein R_5 is hydrogen or methyl;
wherein R_7 is



(1)
(2)
(3)

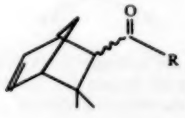
wherein h is zero to three, inclusive,
wherein m is one to 5, inclusive, s is zero, one, 2, or 3 and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms or alkoxy of one to 3 carbon atoms, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;
wherein Y_1 is
(1) trans—CH=CH—
(2) cis—CH=CH—
(3) $—CH_2CH_2—$, or
(4) —C≡C—; and
wherein Z_1 is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —$(CH_2)_2$—O—$(CH_2)_g$—CH_2—,
(8) —$(CH_2)_3$—O—$(CH_2)_g$—,
(9) —C≡C—CH_2—$(CH_2)_g$—CH_2—,
(10) —CH_2—C≡C—$(CH_2)_g$—CH_2—, or
(11) trans—$(CH_2)_2$—$(CH_2)_g$—CH=CH—, wherein g is one, two, or three.

4,148,826
ALKENYL AND ALKYLIDENE NORBORNYL KETONE DERIVATIVES

Kenneth K. Light, Long Branch; James M. Sanders, Eatontown; Manfred H. Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, N.J.; John B. Hall, Rumson, N.J.; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middletown, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

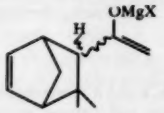
Division of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853. This application Dec. 13, 1977, Ser. No. 860,140
Int. Cl.[2] C07C *45/00, 49/54*
U.S. Cl. 260—586 G **5 Claims**

1. A norbornane derivative having the structure:



wherein R is C_3–C_5 alkenyl or C_3–C_5 alkylidene.

5. A product prepared according to the process of reacting 2-acetyl-3,3-dimethyl-5-norbornene with a complex of N-methyl-aniline and an alkyl magnesium halide to form a grignard salt of 2-acetyl-3,3-dimethyl-5-norbornene having the structure:



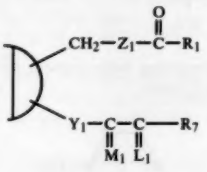
said reacting being carried out from −5° C. up to about 40° C.; reacting the resulting compound with acid aldehyde in the presence of a solvent selected from the group consisting of benzene, tetrahydrofuran, and diethyl ether at a temperature in the range of from −5° C. up to 20° C.; hydrolyzing the resulting material to form substantially a keto alcohol in the presence of a mineral acid; and then dehydrating the resulting keto alcohol with a mild dehydrating agent at a temperature in the range of from 80° C. up to 150° C. over a period of time of from 1 up to 5 hours in the presence of a strong acid.

4,148,827
2-DECARBOXY-2-ALKYLCARBONYL PGD COMPOUNDS

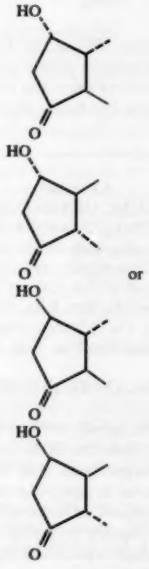
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamzoo, Mich.

Division of Ser. No. 888,695, Mar. 21, 1978, Pat. No. 4,123,463. This application Jul. 17, 1978, Ser. No. 925,256
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—590 C **33 Claims**

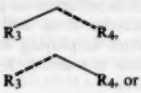
1. A prostaglandin analog of the formula



wherein D is



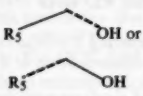
wherein R_1 is alkyl of one to 4 carbon atoms, inclusive; wherein L_1 is



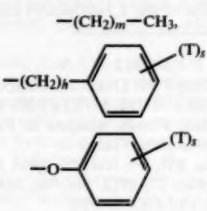
a mixture of

and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl; wherein M_1 is



wherein R_5 is hydrogen or methyl; wherein R_7 is

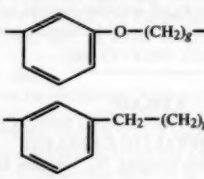


(1)
(2)
(3)

wherein h is zero to three, inclusive, wherein m is one to 5, inclusive, s is zero, one, 2, or 3 and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms or alkoxy of one to 3 carbon atoms, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl; wherein Y_1 is

(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) $—CH_2CH_2—$, or
(4) —C≡C—; and

wherein Z_1 is



(1)
(2)

wherein g is one, two, or three.

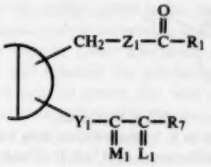
4,148,828

2-DECARBOXY-2-ALKYLCARBONYL-3,7-INTER-m-PHENYLENE-3-OXA-4,5,6-TRINOR-PGA OR PGB COMPOUNDS

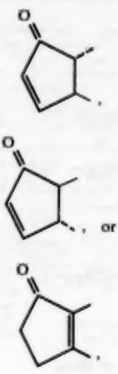
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 888,695, Mar. 21, 1978, Pat. No. 4,123,463. This application Jul. 17, 1978, Ser. No. 925,259
Int. Cl.[2] C07C 177/00
U.S. Cl. 260—590 C **31 Claims**

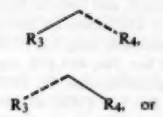
1. A prostaglandin analog of the formula



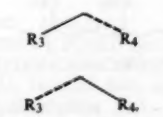
wherein D is



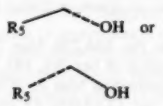
wherein R_1 is alkyl of one to 4 carbon atoms, inclusive; wherein L_1 is



a mixture of

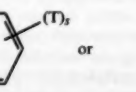


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl; wherein M_1 is



wherein R_5 is hydrogen or methyl; wherein R_7 is

(1) $—(CH_2)_m—CH_3$,



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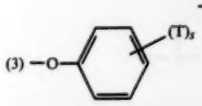
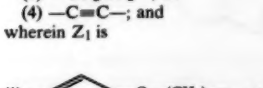


wherein h is zero to three, inclusive,
wherein m is one to 5, inclusive, s is zero, one, 2, or 3 and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms or alkoxy of one to 3 carbon atoms, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;
wherein Y_1 is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) $—CH_2CH_2—$, or
(4) —C≡C—; and
wherein Z_1 is



wherein g is one, two, or three.

4,148,829

PROCESS FOR PRODUCING VITAMIN A

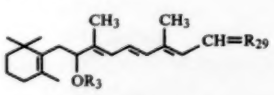
Gary L. Olson, Westfield, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 603,480, Aug. 11, 1975, Pat. No. 4,022,807, which is a division of Ser. No. 464,398, Apr. 26, 1974, Pat. No. 3,928,400. This application Jan. 31, 1977, Ser. No. 764,241

Int. Cl.[2] C07C *47/20*

U.S. Cl. 260—601 R **3 Claims**

1. A compound of the formula:



wherein—$OR_3$is —OH, methylsulfonyloxy, p-toluenesulfonyloxy, benzoyloxy; and R_{29} is oxo or lower alkylenedioxy containing from 2 to 6 carbon atoms.

4,148,830

HYDROFORMYLATION OF OLEFINS

Roy L. Pruett, Charleston, W. Va., and James A. Smith, Cleveland Heights, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 556,270, Mar. 7, 1975, abandoned, which is a continuation of Ser. No. 887,370, Dec. 22, 1969, abandoned. This application May 5, 1976, Ser. No. 683,534

Int. Cl.[2] C07C *45/10*

U.S. Cl. 260—604 HF **10 Claims**

1. In the process of hydroformylating alphaolefins of 2 to 20 carbon atoms to form aldehydes comprising feeding of such alpha-olefin, hydrogen and carbon monoxide to a liquid homogeneous medium at a temperature between about 50° C. and 145° C. which medium contains (i) a solvent therein, (ii) a catalytic amount of rhodium in complex combination with carbon monoxide and triphenylphosphine, (iii) an additional amount of triphenylphosphine such that there is present at least two moles of free triphenylphosphine per mole of rhodium in said medium and (iv) products of the hydroformylation reaction; the total pressure of carbon monoxide and hydrogen is less than 450 psia with a partial pressure attributable to carbon monoxide of no greater than about 75 percent of the total pressure; all of which is sufficient to produce said aldehydes, and recovering aldehydes from said medium; wherein the improvement comprises employing higher boiling aldehyde condensation products containing hydroxyl groups as the solvent in said medium.

4,148,831

METHOD OF PREPARING 1,1-DIFLUOROETHYLENE

Neithardt Schultz; Peter Martens, both of Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed May 25, 1977, Ser. No. 800,605

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1976, 2625470

Int. Cl.[2] B01J *1/10*

U.S. Cl. 260—653.5 **7 Claims**

1. A process for preparing 1,1-difluoroethylene which comprises subjecting 1,1-difluoroethane at a temperature between 20° and 70° C. to photochlorination employing a molar ratio of 1,1-difluoroethane to chlorine of 1:1.0–1.2 to form 1,1-difluoro-1-chloroethane and feeding the reaction products thereof directly to a nickel pyrolysis reactor and pyrolyzing the reaction products without isolation of the 1,1-difluoro-1-chloroethane.

4,148,832

CONTINUOUS PROCESS FOR THE CHLORINATION OF 1,1,1,-TRICHLOROETHANE OR MIXTURES THEREOF

Yves Correia, Saint-Auban, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, France

Continuation of Ser. No. 887,769, Dec. 23, 1969, abandoned. This application Dec. 27, 1972, Ser. No. 318,991

Int. Cl.[2] C07C *17/00*

U.S. Cl. 260—658 R **29 Claims**

1. A continuous process for the chlorination of 1,1,1-trichloroethane comprising reacting molecular chlorine with 1,1,1-trichloroethane in the liquid phase in a first reaction zone in the presence of a catalyst selected from the group consisting of ferric chloride, iron oxychloride and mixtures thereof at a temperature above 35° C. and in the absence of light radiation, passing the effluent from the first reaction zone directly into a second reaction zone and reacting said effluent in the second reaction zone with molecular chlorine, with the amount of chlorine introduced into the first reaction zone being an amount sufficient to maintain chlorine dissolved in the reaction medium in an amount within the range of 0.5 to 4 g/l and the amount of chlorine introduced into the second reaction zone being sufficient to maintain a dissolved chlorine content within the range of 2–15 g/l.

4,148,833

DEHYDROGENATION USING NONACIDIC MULTIMETALLIC CATALYST

George J. Antos, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 758,616, Jan. 12, 1977, Pat. No. 4,087,381, which is a division of Ser. No. 633,890, Nov. 20, 1975, Pat. No. 4,024,052. This application Apr. 10, 1978, Ser. No. 894,958

Int. Cl.[2] C07C *5/36*

U.S. Cl. 260—666 A **21 Claims**

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, at dehydrogenation conditions, with a catalytic composite consisting essentially of a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, and about 0.01 to about 5 wt. % lanthanide series metal; wherein the platinum group metal, catalytically available cobalt and lanthanide se-

ries metal are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group metal is present in the elemental metallic state; wherein substantially all of the lanthanide series metal is present in an oxidation state above that of the elemental metal; and wherein substantially all of the catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under dehydrogenation conditions or in a mixture of these states.

4,148,834

PREPARATION OF SYNTHETIC HYDROCARBON LUBRICANTS

Carl D. Kennedy, Spartanburg, S.C., and Gene E. Nicks, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation of Ser. No. 566,549, Apr. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 453,601, Mar. 21, 1974, abandoned. This application Mar. 8, 1978, Ser. No. 884,679

Int. Cl.[2] C07C *3/52*

U.S. Cl. 260—671 B **10 Claims**

1. A process for preparing a synthetic hydrocarbon lubricant composition, consisting essentially of di-long-chain alkyl aromatic hydrocarbons, wherein the long chain alkyl groups contain about 6 to about 18 carbon atoms and wherein the aryl moiety is phenyl, tolyl, xylyl, or ethylphenyl, said process comprising:

(a) contacting from 1 to 15 moles of an aromatic hydrocarbon, which is benzene, toluene, xylene, or ethylbenzene, with 1 mole of a linear monoolefin containing about 6 to about 18 carbon atoms, in the presence of about 1 to about 30 moles hydrogen fluoride at a temperature in the range of about 5° C. to about 100° C.,

(b) recovering from the reaction mass of step (a) mono-long-chain alkyl aromatic hydrocarbon, wherein the mono-long-chain is as defined,

(c) contacting from 1 to 10 moles of the mono-long-chain alkyl aromatic hydrocarbon of step (b) with 1 mole of linear monoolefin containing about 6 to about 18 carbon atoms in the presence of from 2 to about 10 weight percent aluminum chloride or aluminum bromide, at a temperature of about 60 to about 90° C., and

(d) recovering from the reaction mass of step (c) the di-long-chain alkyl aromatic hydrocarbon.

4,148,835

HYDROCARBON MANUFACTURE FROM ALCOHOLS

Nai Y. Chen, Titusville, N.J., and William J. Reagan, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 14, 1978, Ser. No. 896,267

Int. Cl.[2] C07C *1/20*

U.S. Cl. 260—682 **14 Claims**

1. A process for producing hydrocarbons which comprises contacting, under conversion conditions a charge comprising a C_1–C_4 monohydric alcohol with a catalyst comprising a crystalline aluminosilicate zeolite having a crystal size of at least 1 micron, a silica-to-alumina ratio of at least about 12, a constraint index of about 1 to 12 and having associated therewith a Group 2B component, a Group 8 component and magnesium.

4,148,836

PROCESS FOR REDUCING WATER CONTENT OF SULFURIC ACID IN HYDROCARBON ALKYLATIONS

Robert L. Sturtevant, Baldwinsville; Bela I. Karsay, DeWitt, and Alan B. Gancy, Syracuse, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, N.J.

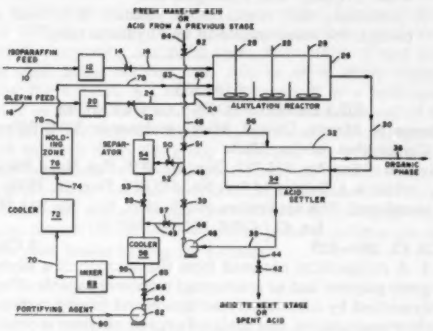
Filed Dec. 23, 1977, Ser. No. 863,656

Int. Cl.[2] C07C *3/54*

U.S. Cl. 260—683.62 **5 Claims**

1. In a process for alkylating hydrocrbons comprising an alkylation zone wherein alkylatable hydrocarbon feedstocks are contacted with alkylating agents in the presence of a concentrated sulfuric acid catalyst containing at least 1.0% but less than 4% water by weight, under alkylation conditions in an alkylation reactor, and wherein the alkylation phase is separated from the acid catalyst phase, the acid catalyst phase is cooled and recycled to the alkylation reactor, and wherein the water content of said acid catalyst phase is reduced by addition thereto of sulfur trioxide fortifying agents, the improvement which comprises:

a. prior to the addition of said sulfur trioxide, removing hydrocarbons dispersed in said acid catalyst phase;



b. periodically introducing said sulfur trioxide into said acid catalyst from step (a), said periodic introduction being for a time less than 6% of the time said acid catalyst is in contact with said hydrocarbons in said alkylation zone.

c. cooling said fortified acid catalyst from step (b) to remove heat generated by said periodic introduction of said sulfur trioxide; and

d. delaying the recycle of said cooled fortified acid catalyst from step (c) to the alkylation reactor for a time sufficient to allow substantially all of said sulfur trioxide to react with water present in said acid.

4,148,837

REGENERATION OF FUSED SALT COMPLEX CATALYST IN HYDROCARBON ISOMERIZATION

Herbert L. Benson, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 716,031, Aug. 20, 1976, Pat. No. 4,045,509, which is a division of Ser. No. 593,336, Jul. 3, 1975, Pat. No. 3,992,326. This application Jul. 25, 1977, Ser. No. 818,488

Int. Cl.[2] C07C *5/28*

U.S. Cl. 260—683.74 **1 Claim**

1. A process for regenerating the paraffinic hydrocarbon isomerization activity of a catalytic composition in a isomerization reaction zone wherein the catalytic composition comprises a fused salt complex of an aluminum halide selected from the class consisting of aluminum chloride, aluminum bromide and mixtures thereof and a manganous halide selected from the class consisting of a manganous chloride, manganous bromide and mixtures thereof present on the surfaces of a porous, refractory inorganic oxide carrier; said solid catalytic composition being formed by heating a composite mixture of the halide salt components of the fused salt complex to a temperature above the melting point of the composite, depositing the melted composite on the carrier surfaces and cooling of the carrier containing the melted composite to a temperature below the melting point of the fused salt complex, said catalytic composition having lost activity during said isomerization of less-branched paraffinic hydrocarbons in the vapor phase to more-branched paraffinic hydrocarbons in the presence of hydrogen and hydrogen halide which comprises:

(a) discontinuing the isomerization reactant flow over the catalyst,
(b) removing substantially all of the volatile hydrocarbons from the catalyst surface by stripping with hydrogen gas at elevated temperatures,
(c) cracking and removing residual hydrocarbons from the catalyst surface by stripping with a gaseous mixture of hydrogen and hydrogen chloride at elevated temperatures,
(d) stripping with hydrogen chloride at substantially the same temperature employed in step (c),
(e) cooling to the temperature desired for isomerization while stripping with hydrogen, and
(f) continuing said isomerization reactant flow over said catalyst for isomerization of said hydrocarbons.

4,148,838

SILYLATED BLOCK COPOLYMERS

Eugene R. Martin, Onsted, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Division of Ser. No. 645,733, Dec. 31, 1975, Pat. No. 4,080,400, which is a division of Ser. No. 533,051, Dec. 16, 1974, abandoned. This application Jul. 5, 1977, Ser. No. 813,157
Int. Cl.[2] C08F *293/00, 297/02*
U.S. Cl. 260—825 **5 Claims**

1. A composition obtained from the reaction of a silylated organic polymer and an unsaturated monomer capable of being polymerized by anionic polymerization and having carbon-to-carbon unsaturation, said silylated organic polymer is obtained from the reaction of a silane of the formula

$$X_{4-(a+b)}-Si(CH=CH_2)_a$$
$$\quad\quad\quad

group consisting of acrylic acid, methacrylic acid and esters thereof, the weight ratio of vinylbenzene compound to acrylic compound being about 1:4 to 4:1; and

(2) an effective fire retardant proportion of about 0.5 to about 10 weight percent of a smoke inhibiting additive consisting essentially of at least 0.5 weight percent of a compound of iron, a mixture of said iron compound with a compound of copper, a mixture of said iron compound with a compound of antimony or a mixture of said iron compound with a compound of copper and a compound of antimony with the proviso that when said additive is a compound of iron that is soluble in said polyester, the compound of iron is free of iron-to-carbon bonds, said composition being substantially phosphorus-free and said proportions and weight percents being based on the weight of the copolymerizable mixture.

4,148,842

BLENDS OF A POLYCARBONATE RESIN AND INTERPOLYMER MODIFIER

Arthur J. Yu, Stamford, Conn., and Joseph Silberberg, Brooklyn, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 15, 1978, Ser. No. 915,704
Int. Cl.² C08L 69/00
U.S. Cl. 260—873 **6 Claims**

1. A weatherable, impact resistant blend comprising: (1) a polycarbonate resin; and (2) an interpolymer modifier comprising crosslinked (meth)acrylate, crosslinked styrene-acrylonitrile, and uncrosslinked styrene-acrylonitrile polymeric components.

4,148,843

COMPOSITIONS OF CAPPED POLYPHENYLENE OXIDES AND ALKENYL AROMATIC RESINS

John C. Goossens, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 23, 1977, Ser. No. 863,670
Int. Cl.² C08L 25/00
U.S. Cl. 260—874 **12 Claims**

1. A process for the preparation of a composition which comprises:

(a) a polyphenylene oxide resin that is capped with a compound selected from the group consisting of acid halides, acid anhydrides and ketenes; and

(b) an alkenyl aromatic resin; said process comprising forming a mixture of a capped polyphenylene oxide in an alkenyl aromatic monomer and thereafter heating said mixture for a sufficient period of time at an elevated temperature to form said composition.

4,148,844

POLYMERIZATION PRODUCTS CONTAINING POLYCARBODIIMIDES AND VINYL MONOMERS

Wulf von Bonin, Leverkusen; Lothar Preis, Cologne, and Ulrich von Gizycki, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed May 24, 1977, Ser. No. 800,028
Claims priority, application Fed. Rep. of Germany, May 29, 1976, 2624198
Int. Cl.² C08L 79/00, 67/00
U.S. Cl. 260—874 **5 Claims**

1. A casting resin comprising a mixture of (A) a polycarbodiimide having a molecular weight above 300, containing at least two carbodiimide groups per molecule and prepared by intermolecular elimination of carbon dioxide from a polyfunctional isocyanate and (B) 0.5 to 70% by weight, based on the weight of the mixture, of a monomer selected from the group consisting of styrene, diallylphthalate, and a mixture of styrene and divinyl benzene.

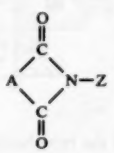
4,148,845

GRAFT COPOLYMERS OF COPOLYMERS OF OLEFINS OR OF OLEFINS AND NON-CONJUGATED DIENES SUBSTRATES WITH UNSATURATED DERIVATIVES OF CYCLIC IMIDES GRAFTED THEREON

Gilbert Marie, Pau; André Lang, Billère, and Gilbert Chapelet, Lacq, all of France, assignors to Société Nationale Elf Aquitaine, Courbevoie, France

Division of Ser. No. 637,221, Dec. 3, 1975, Pat. No. 4,063,010. This application Sep. 28, 1977, Ser. No. 837,456
Claims priority, application France, Dec. 12, 1974, 7440949
Int. Cl.² C08L 23/08, 23/16
U.S. Cl. 260—878 R **21 Claims**

1. An amorphous graft copolymer containing from 99.9 to about 80% by weight of an amorphous random copolymer substrate comprising non polar units, 80 to 100% of said non polar units being derived from two or more mono olefins having the formula $R\text{-}CH{=}CH_2$ wherein R is a hydrogen atom or an alkyl radical having 1 to 16 carbon atoms and up to about 20% are derived from one or more non-conjugated dienes selected from the group consisting of 1,4-hexadiene, methyl-2-pentadiene, 1,4-cyclopentadiene, 1,5-cyclooctadiene, tetrahydro-4,7,8,9-indene, bicyclo(3,2,0)heptadiene-2,6, dicyclopentadiene, and alkylidene-5-norbornene-2, having grafted thereon from 0.1 to 20% by weight of polar units from one or more cyclic imides having the formula



wherein Z is an alkenyl radical having 2 to 16 carbon atoms and wherein A is a hydrocarbon radical selected from the group consisting of saturated bivalent hydrocarbon radicals having 2 to 12 carbon atoms, unsaturated bivalent hydrocarbon radicals having 2 to 12 carbon atoms, amino, halogeno and carboxyl substituted bivalent saturated or unsaturated hydrocarbon radicals having 2 to 12 carbon atoms, said amorphous random copolymer substrate being obtained by contacting, at a temperature from −80° C. to 150° C., a member selected from the group consisting of a mixture of two or more of said monoolefins, and a mixture of two or more of said monoolefins with one or more of said non-conjugated dienes in the presence of a catalytic system formed by the association of an organometallic compound of one or more elements of the Groups I, II, and III of the Mendeleev Periodic Table of the Elements with a compound of a transition metal of groups IV to VIII of said Periodic Table.

4,148,846

ACRYLIC MODIFIERS FOR POLYCARBONAMIDES

Frederick H. Owens, Wilingboro, N.J., and James S. Clovis, Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 207,643, Dec. 13, 1971, Pat. No. 4,086,300, which is a division of Ser. No. 71,228, Sep. 10, 1970, Pat. No. 3,668,274. This application Dec. 5, 1977, Ser. No. 857,322
Int. Cl.² C08L 31/02
U.S. Cl. 260—885 **1 Claim**

1. A multi-phase polymer for modifying polycarbonamides comprising (A) a first elastomeric phase having a glass temperature less than 25° C. and polymerized from monomers comprising a major amount of an alkyl acrylate, a polyunsaturated crosslinking monomer having a plurality of addition polymerizable unsaturated groups, each of which participates in the polymerization reaction at about the same rate as one another, a graftlinking monomer having two or more addition polymerizable unsaturated reactive groups which participate in the polymerization reaction at substantially different rates, and (B)

a final rigid phase having a glass temperature above 50° C. and containing amine-reactive carboxylic acid groups and polymerized from monomers comprising a major amount of a styrene and a minor amount of a copolymerizable carboxylic acid.

4,148,847

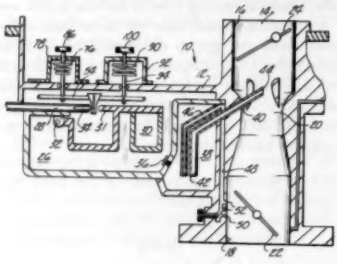
CARBURETOR FLOAT BOWL WITH TEMPERATURE AND PRESSURE RESPONSIVE FUEL LEVEL CONTROL MEANS

Albert C. Russell, One Eastwood La., Belleair, Fla. 33516

Filed Jun. 20, 1977, Ser. No. 808,130

Int. Cl.[2] F02M *5/00*

U.S. Cl. 261—39 A **5 Claims**



1. In a carburetor of the type having a housing, air flow passage means formed through said housing, a fuel bowl formed in the housing and fluid passage means in said housing for fluidly connecting said fuel bowl to said air flow passage means, a source of fuel fluidly connected to the float bowl, float means contained within the interior of the float bowl for maintaining the fuel level in the float bowl at a determinable level, said float means being pivotally coupled to said housing and including a contact arm mechanically coupled to a fuel valve, the improvement which comprises,

temperature means operatively connected with said float means for varying said determinable fuel level proportionately with the temperature of the air flow through said air flow means,

pressure means operatively connected with said float means for varying said determinable fuel level proportionately with the air pressure of the air surrounding said carburetor, said pressure means further comprising a first level positioner axially disposed between said contact arm and said fuel valve, said first level positioner having a contoured edge which varies the width between said contact arm and said fuel valve in accordance with the axial position of said first level positioner, and means responsive to air pressure for varying the axial position of said level positioner, said temperature means further comprising a second level positioner axially disposed between said contact arm and said fuel valve, said second level positioner having a contoured edge which varies the width between said contact arm and said fuel valve in accordance with the axial position of said second level positioner, and means responsive to air temperature for varying the axial position of said second level positioner, wherein said level positioners are positioned in a side-by-side relationship with respect to each other and so that said contoured edges of said level positioners face away from each other, one contoured edge abutting against said contact arm and the other edge abutting against said fuel valve, said level positioners being movable independently of each other.

4,148,848

AIR BLEED TYPE CARBURETOR

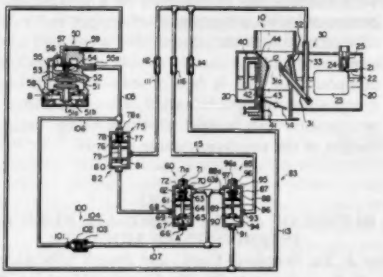
Tamotu Ogita, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 17, 1977, Ser. No. 852,239

Claims priority, application Japan, Oct. 21, 1977, 52-125851

Int. Cl.[2] F02M *23/06*

U.S. Cl. 261—39 A **9 Claims**



1. An air bleed type carburetor for supplying an air-fuel mixture to an engine, which comprises:

an altitude compensating means, communicated with a vacuum supply means and provided with a vacuum port and an air port, said vacuum port being filled with a vacuum supplied from said vacuum supply means and said air port supplying air when the altitude is higher than a predetermined altitude level;

a first control valve means for permitting a bleed air flow to pass to a main jet of said carburetor when the operating characteristic of said engine is lower than a predetermined first load level;

a second control valve means, communicating said first control valve means to said main jet of said carburetor, which is communicated with said vacuum port of said altitude compensating means for permitting said bleed air flow from said first control valve means to pass at low altitude and for preventing said bleed air flow from occurring at high altitude, and;

a third control valve means, communicated with said air port of said altitude compensating means, which permits said bleed air flow to pass at high altitude when the operating characteristics of said engine are lower than those at a predetermined second load level.

4,148,849

AIR PURIFYING AND MOISTENING APPARATUS

Paul Steiner, Buchenstrasse, CH-9422 Staad, Switzerland

Filed Mar. 29, 1977, Ser. No. 782,332

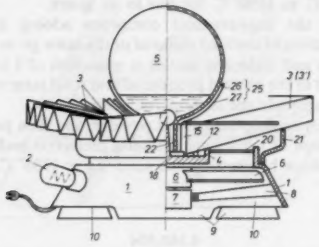
Claims priority, application Switzerland, Mar. 29, 1976, 3899/76

Int. Cl.[2] F21V *1/00*; B01D *1/14*

U.S. Cl. 261—104 **20 Claims**

1. An air purifying and moistening apparatus comprising a frame or housing and at least one lamp and a lamp shade made of absorbent material, said shade being in communication with a water supply vessel (5) for taking up water by capillary action from said vessel and said water being evaporated from

said shade, and said supply vessel (5) being detachable and including a water container or dish (4) with an opening (22) in



said supply vessel for dripping water into said water container or dish and moistening the lower end.

4,148,850

SUPPORTING STRUCTURE FOR LARGE NATURAL DRAFT COOLING TOWER

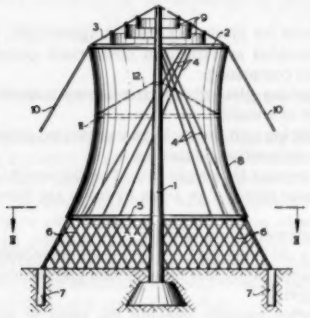
Hugo Schulte; Wolfgang Müller, both of Ratingen; Jörg Schlaich, Kernen, and Günter Mayr, Stuttgart, all of Fed. Rep. of Germany, assignors to Balke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Continuation of Ser. No. 303,150, Nov. 2, 1972, abandoned. This application Feb. 3, 1978, Ser. No. 874,813

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1971, 2154967; Sep. 1, 1972, 2243222

Int. Cl.[2] B01F *3/04*

U.S. Cl. 261—109 **14 Claims**



1. A cooling tower structure for natural draft cooling tower installations, the structure comprising in combination:

a foundation serving as a footing for the cooling tower;

a vertical central tower support anchored in the tower foundation and capable of carrying the weight of the entire cooling tower structure;

an upper horizontal tie ring concentrically surrounding the central tower support at a distance below its top end;

a first series of supporting cables arranged in a circle and extending radially and obliquely upwardly from the upper tie ring to a point near said top end of the central tower support, thereby supporting said tie ring;

a second series of supporting cables extending downwardly from the upper tie ring in a hyperboloid latticework arrangement, in which a first set of said cables are diagonally inclined in relation to the tower support axis, so as to define a first hyperboloid-shaped cable grid of right-hand-helical appearance, and a second set of said cables are oppositely diagonally inclined so as to define a second, coextensive cable grid of left-hand-helical appearance;

means connected to said two diagonal cable grids for tensioning the latter downwardly against the tower foundation, thereby exerting a substantial downwardly directed pre-load on said hyperboloid-shaped cable grids; and

a hyperboloid-shaped cooling tower mantle having a substantially airtight light-weight wall coextensively attached to said two diagonal cable grids; said mantle being thus suspended from the central tower support via said first and second series of supporting cables and said upper tie ring; the upper and lower ends of the tower mantle being open for an upward air flow therethrough; and the lower mantle end being spaced a distance from the cooling tower footing to provide an inlet for said air flow.

4,148,851

PROCESS FOR PRODUCING THERMOPLASTIC POLYMER SHEETS

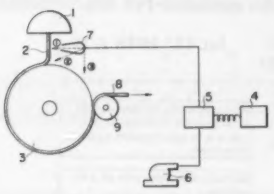
Yoshio Tani; Eizi Takahashi; Mitunori Hachisuka, and Sin Togami, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Jul. 6, 1977, Ser. No. 813,387

Claims priority, application Japan, Jul. 6, 1976, 51-80085

Int. Cl.[2] B06B *3/00;* **B29D** *7/02*

U.S. Cl. 264—23 **15 Claims**



1. A process for producing a thermoplastic polymer sheet which comprises extruding a molten thermoplastic polymer capable of forming a film through an extrusion die in the form of a polymer sheet onto the surface of a moving cooling body and supplying a liquid, in an amount sufficient to adhere the polymer sheet to the surface of the cooling body in the form of a vapor or fine liquid droplets thereof and at a position between the extrusion die and the surface of the cooling body, to that surface of the extruded polymer sheet which faces the cooling body and is to contact the cooling body.

4,148,852

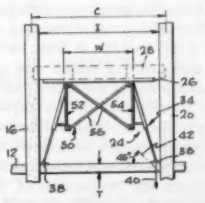
METHOD AND APPARATUS FOR PROGRESSIVE MOLDING OF BUILDINGS

Stephen S. Dashew, Palos Verdes Estates, Calif., assignor to La Mesa Industries, Inc., Compton, Calif.

Filed Mar. 25, 1974, Ser. No. 454,100

Int. Cl.[2] E04G *11/56*

U.S. Cl. 264—33 **10 Claims**



6. A method for forming a next higher concrete floor above an already-formed concrete floor, in a building that has a plurality of spaced columns that support the already-formed floor above the ground, comprising:

positioning a truss assembly that contains a truss and four extensible leg units spaced about the truss and pivotally

connected to it, between a group of said columns and above said already-formed floor;

pivoting and extending said leg units so that the lower end of each leg unit rests on an area of said already-formed floor adjacent to one of said columns and with the middle of the leg unit bottom located within the 45° shear plane about the column, and supporting the weight of the truss and any load thereon including supporting a majority of the weight of the truss and any load thereon through said four leg units to said floor areas around said columns; and

mounting forms on said truss and pouring concrete onto said forms, whereby most of the weight of the forms and concrete is carried through said truss and leg units to floor areas within the shear plane and thus by compressive loading of the already-formed floor to the columns.

4,148,853

PROCESS FOR THE MANUFACTURE OF A CAPACITOR DIELECTRIC WITH INNER BLOCKING LAYERS

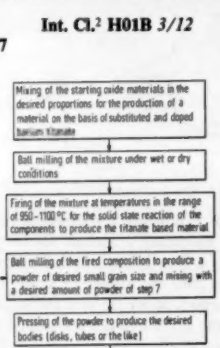
Helmuth Schuber, Deutschlandsberg, Austria, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 2, 1977, Ser. No. 830,045

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1976, 2641701

Int. Cl.[2] H01B *3/12*

U.S. Cl. 264—37 **9 Claims**


Mixing of the starting oxide materials in the desired proportions for the production of a material on the basis of substituted and doped barium titanate
Ball milling of the mixture under wet or dry conditions
Firing of the mixture at temperatures in the range of 950–1100 °C for the solid state reaction of the components to produce the titanate based material
Ball milling of the fired composition to produce a powder of desired small grain size and mixing with a desired amount of powder of step 7
Pressing of the powder to produce the desired bodies (disks, tubes or the like)
Sintering of the bodies at temperatures in the range of 1250 – 1450 °C
Ball milling of some pieces of the sintered bodies to obtain a powder of a grain size similar to that of step 4

1. In a method for the manufacture of a capacitor dielectric with inner blocking layers in which starting components are provided comprising: polycrystalline ceramic solids of materials with perovskite structure on the basis of barium titanate of the general formula

$$(Ba_{1-x}M_x^{II})\ O{\cdot}z(Ti_{1-y}M_y^{IV})\ O_2$$

with M^{II} selected from the group consisting of Ca, Sr, Pb, Mg and M^{IV} selected from the group consisting of Zr, Sn where z is in a range from 1.005 to 1.05, at least two different doping substances in the dielectric of which one substance selected from the group consisting of antimony, niobium, lanthanum and bismuth is in the interior of the crystallite and causes predominantly n-type conductivity and the other selected from the group consisting of copper, iron, and manganese is in the surface layer of the crystallite and causes predominantly p-type conductivity of which the proportion of the n-type doping substance which causes the n-conductivity is larger by a factor of 1.5 to 2.5 than a maximum of the doping substance, and the proportion of the substance which causes the p-type conductivity amounts to 0.01 to 0.15% by weight;

and wherein said starting components are mixed, ground and thereafter are brought to solid state reaction at 950° C. to 1100° C. to produce a perovskite material,

after which a product of the reaction is ground again to desired particle size and solid dielectric bodies of desired shape are produced from the powder by pressing;

and wherein the bodies are then subjected to sintering at 1250° C. to 1450° C. for one to six hours;

wherein the improvement comprises adding a powder ground out of sintered material of the same gross composition as said dielectric bodies in quantities of 1 to 70% by weight to the ground product of said solid state reaction in approximately the same particle size;

intensively mixing the ground powder; and then performing said steps of producing the solid dielectric bodies of desired shape by pressing and sintering at 1250° C. to 1450° C.

4,148,854

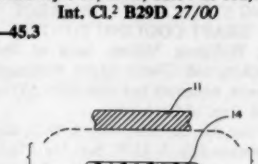
MATCHED DIE MOLDING OF FIBER REINFORCED PLASTIC ARTICLES

Howard P. Cordts, Grafton, and Eugene J. Grandlic, Sheboygan, both of Wis., assignors to Freeman Chemical Corporation, Port Washington, Wis.

Filed Apr. 29, 1976, Ser. No. 681,727

Int. Cl.[2] B29D *27/00*

U.S. Cl. 264—45.3 **5 Claims**



1. A method for producing foamed lightweight, glass fiber reinforced molded articles from unsaturated polyester resin compositions comprising:

(1) introducing glass fibrous reinforcing material into one element of a mold;

(2) introducing into the mold an unsaturated polyester resin syrup composition containing

(a) 0.5 to 3 percent by weight (based on the weight of unsaturated polyester resin) of an alpha hydroxy azo blowing agent and

(b) a polymerization initiator;

(3) closing the mold until the said resin composition fills the entire mold cavity and wets the said glass fibrous reinforcing material;

(4) thereafter partially opening the mold to increase the volume of the mold cavity by at least 50 percent greater than the volume of the said mold cavity in step (3);

(5) retaining the mold as in step (4) until the said resin composition has foamed and cured;

(6) opening the mold and withdrawing a foamed and cured reinforced plastic article.

4,148,855

METHOD OF MOLDING A FOAMED MATTRESS HAVING A CROWN AREA WITH CORED-OUT AREAS

Robert J. Stalter, Bowling Green, and Theodore B. Burkholder, Perrysburg, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

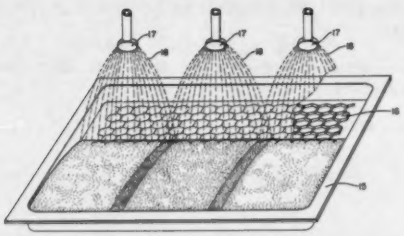
Division of Ser. No. 678,011, Apr. 19, 1976, Pat. No. 4,073,020. This application Nov. 7, 1977, Ser. No. 849,139

Int. Cl.[2] B29D *27/04*

U.S. Cl. 264—54 **2 Claims**

1. A method for making a mattress core comprising effecting relative movement between a pour means and a mold having a cavity with a mattress crown configuration in the bottom thereof, said cavity containing gates to give a cored-out pattern in said crown, distributing in a fan-shaped arc a foamable

liquid polyurethane reaction mixture in response to the relative movement between the pouring means and the mold to distribute the mixture from one end and over the gates to the other end of the mold, allowing the mixture to foam and fill the mold and cure before removing said core from the mold.

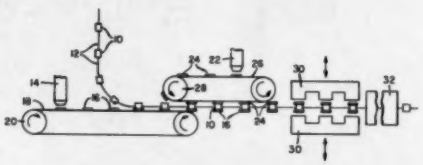


4,148,856

METHOD FOR CONTINUOUS COMPONENT ENCAPSULATION

Robert W. Gress, Elmira, N.Y., and Robert W. Sands, Bradford, Pa., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 16, 1974, Ser. No. 498,098
Int. Cl.[2] B29C 6/00
U.S. Cl. 264—71 **6 Claims**



1. A method of encapsulating a component comprising the steps of

providing a quantity of viscous encapsulating material,

adhering a portion of said encapsulating material directly to one exterior surface area of said component,

adhering another portion of said encapsulating material directly to another exterior surface area of said component, the adhesion of encapsulating material to each exterior surface area comprises ejecting a predetermined quantity of encapsulating material from an extrusion nozzle directly to said areas, thereafter

disposing said component and said portions of said encapsulating material between a pair of force members,

applying an external force by said force members to both of said portions of said encapsulating material simultaneously causing said encapsulating material to flow substantially covering the entire exterior surface of said component, and thereafter

curing said encapsulating material.

4,148,857

RIGID BUILDING COMPONENT AND METHOD OF MANUFACTURE

Robert G. Wheeler, Corvallis, Oreg., assignor to Wood Processes, Oregon Ltd., Corvallis, Oreg.

Filed Sep. 12, 1977, Ser. No. 832,207
Int. Cl.[2] B29J 5/04
U.S. Cl. 264—87 **10 Claims**

1. The method of manufacturing a rigid building component comprising:

preparing a first slurry-formed wet web of cellulosic fibers having a moisture content of at least about 50% whereby the resultant web is pulpy and placing said cellulosic web on a metal caul plate adapted for reception within a heated press,

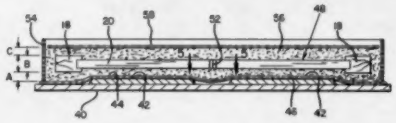
mixing a quantity of discrete coarse wooden particles with an adhesive material for coating adhesive on the said particles,

depositing a first layer of said discrete, adhesive coated, coarse wooden particles on said first cellulosic web to a first predetermined thickness level whereby said layer of coarse wooden particles is substantially thicker than said cellulosic web,

preparing a solid wooden edge member and placing the same on said first layer of wooden particles, said edge member having a predetermined thickness,

depositing a second quantity of said discrete, adhesive coated, coarse wooden particles adjacent said wooden edge member and above said wooden edge member to a second level wherein the spacing of said second level above said wooden edge member is approximately equal to the spacing of said first level above the first cellulosic web,

preparing a second slurry-formed wet web of cellulosic fibers having a moisture content of at least about 50% whereby the resultant web is pulpy, said second web being similar to the first, and placing said second web over said



second quantity of coarse wooden components at said second level,

transferring said caul plate together with said cellulosic fiber webs with said coarse wooden components and edge member therebetween into a heated press, and compressing the assembly on said caul plate in substantially one compression operation at an elevated temperature to compact and consolidate said coarse wooden particles to a thickness substantially reduced from the original thickness of said particles as initially deposited between said cellulosic webs, wherein said pressure and elevated temperature are maintained for a period of time for setting said adhesive and bonding said consolidated particles together throughout said building component at the reduced thickness thereof including compressing the particles between said edge member and said cellulosic webs to a thickness of about one-half or less their original thickness to provide a solid durable edge adhered to said edge member by said adhesive, said cellulosic fiber webs being transformed into dense, tough and smooth surfaced skins firmly bonded to the consolidated particles,

and trimming said building component at least to said solid wooden edge member whereby the edge member forms the edge of said building component.

4,148,858

PROCESS FOR THE PROTECTION AGAINST CORROSION OF CAST IRON BOILERS

Helmold von Plessen, Kelkheim, and Kurt Bodenbenner, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 12, 1977, Ser. No. 796,456
Claims priority, application Fed. Rep. of Germany, May 15, 1976, 2621658
Int. Cl.[2] C23F 11/02, 11/04
U.S. Cl. 422—12 **5 Claims**

1. Process for the protection of gray cast iron against corrosion by the vapors of boiling concentrated sulfuric acid, which comprises introducing an inorganic compound containing

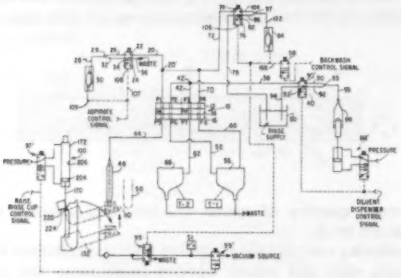
positive nitrogen selected from the group consisting of NO, NO_2, N_2O_3, and nitric acid into a vapor filled gas space between the boiling sulfuric acid and the cast iron to be protected.

4,148,859

BACKWASH SYSTEM FOR DILUTING APPARATUS

Ronald O. Simpson, and Pedro P. Cabrera, both of Miami, Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed May 15, 1978, Ser. No. 906,235
Int. Cl.[2] G01N *1/14*
U.S. Cl. 422—103 19 Claims



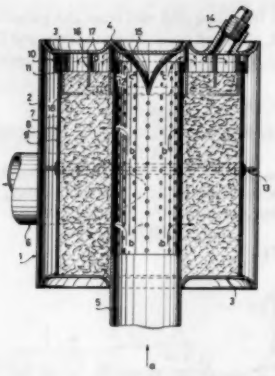
1. In a backwash system capable of being operationally coupled for use with a diluting system of the type providing a plurality of dilutions of differing concentration from a single liquid sample and which diluting system includes a source of fluid pressure and vacuum, a source of liquid sample and a source of diluent, a liquid transfer valve coupled to the sources of liquid sample and diluent, said transfer valve including interior precise measuring portions, for measuring and combining precise volumes of liquid sample and diluent to produce said dilutions, an aspirator including an aspirator tube having a delivery end introducible into the liquid sample and coupled to said liquid transfer valve, said backwash system arranged to pass diluent from the source thereof to the interior passageways of said liquid transfer valve, through the aspirator tube at a predetermined stage in the operation of the system, means capable of storing and delivering a known volume of diluent, a control valve including an actuator therefor positioned intermediate said diluent source and liquid transfer valve, said control valve operable between a first position only permitting passage of diluent from the diluent source to the storing and delivering means and a second position only permitting passage of diluent from the storing and delivering means to the liquid transfer valve and a collector vessel arranged to receive the backwashed liquid from the aspirator tube; the improvement comprising means mounting the collector vessel for movement along a predetermined path between a location displaced from the delivery end of the aspirator tube and a location engaging the delivery end of the aspirator tube in a sealed coupling therewith, said means including carrier means mounting said vessel, guide means defining said path, drive means coupled to a source of fluid pressure and to said carrier means for reciprocably moving said carrier means along said path and fail-safe switch means operable only upon establishment of said sealed coupling to permit delivery of diluent to the transfer valve as backwash.

4,148,860

CATALYTIC CONVERTER FOR EXHAUST GASES

Eitel Goedicke, Ahe, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 5, 1977, Ser. No. 857,129
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1976, 2655751
Int. Cl.[2] B01J *8/02;* F01N *3/15*
U.S. Cl. 422—176 6 Claims



1. A converter for catalytic conversion of exhaust gas from internal combustion engines comprising: a housing closed by means of an upper and a lower end plate, the lower end plate being penetrated longitudinally by a gas inlet; the housing being provided with a gas outlet opening thereinto rectangularly with respect to the gas inlet and with an inner perforated tube and an outer perforated tube which are spaced apart concentrically with respect to one another so as to form an annular space therebetween; said inner perforated tube being connected to said gas inlet and said outer perforated tube being secured to said lower end plate; said annular space being substantially fully occupied by a granular catalyst forming a bed with an upper free end region; a gas flow-defining means comprising a gas deflecting cone secured to the upper end plate, a first partially perforated metal collar enveloping said deflecting cone being secured substantially perpendicularly to the upper end plate, a second metal collar arranged concentrically to the first metal collar and being secured substantially perpendicularly to the upper end plate, and an annular plate connected substantially perpendicularly to the second metal collar; the gas flow-defining means causing a major proportion of the exhaust gas admitted through the gas inlet to flow radially through said catalyst bed, and a minor proportion thereof to flow axially through said inner tube; said minor exhaust gas proportion being deflected in contact with said cone so as to flow through the perforated portion of the first metal collar and form an axial stream of gas impinging upon the upper free end region of the catalyst bed under a pressure higher than the pressure exerted by the gas flowing radially through the catalyst bed, said higher pressure enabling the catalyst bed to be compressed in longitudinal position.

4,148,861

METHOD FOR THE OXIDATION OF VALUES PRESENT IN LOW VALENCE STAGES AND DISSOLVED IN LIQUIDS

Helmut Hausberger, Bad Schönborn, and Peter Schlosser, Karlsruhe, both of Fed. Rep. of Germany, assignors to Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen m.b.H., Leopoldshafen, Fed. Rep. of Germany

Filed Mar. 4, 1977, Ser. No. 774,656

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1976, 2613536

Int. Cl.[2] C01G *56/00*

U.S. Cl. 423—3 10 Claims

1. Method for oxidizing a value present in a low valence stage in an aqueous solution and if present oxidizing a compound which stabilizes this low valence stage, said aqueous solution arising in a reprocessing process for irradiated nuclear fuel and/or breeder material, the value being U(IV) or Pu(III) comprising adding dinitrogen tetroxide (N_2O_4) in liquid form to the aqueous solution as an oxidation agent in an amount which corresponds to only a slight excess over the amount of N_2O_4 required stoichiometrically to oxidize the value and the stabilizing compound, and conducting the oxidation reactions which subsequently take place as substantially liquid-liquid reactions.

6. Method for oxidizing, in a wash solution, a compound which stabilizes the low valence stage of U(IV) or Pu(III), which valence stage is present in a liquid solution arising in a reprocessing process for irradiated nuclear fuel and/or breeder material, comprising adding dinitrogen tetroxide (N_2O_4) in liquid form to the wash solution as an oxidation agent, and conducting the oxidation reactions which subsequently take place as substantially liquid-liquid reactions.

4,148,862

HYDROMETALLURGICAL TREATMENT OF SOLUBLE SILICATE-BEARING ZINC MATERIALS

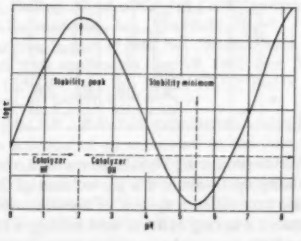
Sigmund P. Fugleberg, and Jaakko T. I. Poijärvi, both of Pori, Finland, assignors to Outokumpu Oy, Outokumpu, Finland

Filed Oct. 6, 1977, Ser. No. 840,041

Claims priority, application Finland, Oct. 8, 1976, 762880

Int. Cl.[2] C01B *33/12;* C01G *9/06*

U.S. Cl. 423—106 5 Claims



1. In a hydrometallurgical process for the treatment of a sulfuric acid soluble silicate-bearing zinc calcine for the recovery of its valuable metal content by leaching the silicate-bearing material at an elevated temperature with an aqueous solution of sulfuric acid and by precipitating silicic acid in a single reactor vessel and subsequently separating the precipitate from the metal-bearing solution; the improvement comprising precipitating the silicic acid in an easily settling and filtering form by adding silicate-bearing material at a rate such that its concentration, calculated as SiO_2, corresponds to the simultaneously precipitating silicic acid quantity and the silicate-bearing material is added at a maximum rate of about 6 grams per liter of reactor volume per hour.

4,148,863

METHOD OF PREPARING POLYCRYSTALLINE CUBIC BORON NITRIDE

Vladimir I. Farafontov, Leningradskaya, oblast; Mirra I. Sokhor, Leningrad; Natalia G. Kushkova, Leningrad; Viktor V. Digonsky, Leningrad, and Vladislav S. Lysanov, Leningrad, all of U.S.S.R., assignors to Vsesojuzny Nauchni-Issledovatelsky Institut Abrazivov I Shlifovania, Leningrad, U.S.S.R.

Filed Jun. 28, 1978, Ser. No. 919,906

Claims priority, application U.S.S.R., Jul. 7, 1977, 2502649

Int. Cl.[2] C01B *21/06*

U.S. Cl. 423—290 4 Claims

1. A method of preparing polycrystalline cubic boron nitride residing in that hexagonal boron nitride is subjected to pressure of 40–90 kbar and temperature of 1200°–2400° C. in the presence of a catalyst which is a zinc compound.

4,148,864

SILICA GEL OF IMPROVED PROPERTIES AND PROCESS OF MAKING SAME

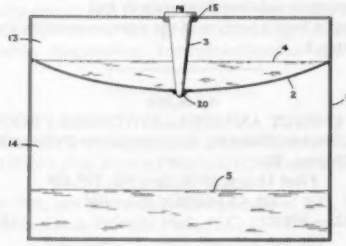
Wilhelm Groth, Bonn, and Peter Hussmann, Munich, both of Fed. Rep. of Germany, assignors to Mittex Aktiengesellschaft, Vaduz, Liechtenstein

Filed Dec. 6, 1976, Ser. No. 747,474

Claims priority, application Fed. Rep. of Germany, May 5, 1976, 2624392; Italy, Jun. 4, 1976, 9474 A/76

Int. Cl.[2] C01B *33/12*

U.S. Cl. 423—335 51 Claims



1. In a process of producing silica gel, including the steps of precipitating a silicic acid-containing starting materials and acid reactant to first form an unstable silicic acid containing sol as an intermediate product, subsequently gelling the sol, washing the gel to remove the salts, and drying the gel, the improvements which comprise carrying out the precipitation process in two steps, wherein in the first step a first silicic acid-containing starting material with a silicon dioxide content between about 20% and about 32% by weight is introduced in such a fine distribution and at such a high discharge velocity into the acid reactant, while being subjected to high speed agitation, until a pH-value of the acid reactant between about 1.5 and about 1.8 is attained, that instantaneous reaction between the acid and the silicic acid containing starting material takes place without any precipitation of silicic acid, and wherein in the second precipitation step a second silicic acid-containing starting material having a silicon dioxide content between about 8% and about 14% by weight is introduced into the acid reactant until a pH-value of between about 2.6 and about 3.5 is attained, thereby producing a sol having a silicon dixoide content of about 14% to about 18% by weight, and carrying out the washing step by washing with a washing liquid of a pH between about 1.8 and about 12.0.

39. Silica gel having a silicon dioxide content of between about 16% and about 24%, a pore diameter of between about 20 and about 25 Angstroem, a wetting heat of between about 32 and about 35 cal./g., a bulk weight between about 720 and about 770 g./cm.^{3}, an adsorption temperature of up to about

100° C. and a desorption temperature of between about 150° C. and about 200° C.

4,148,865

TREATMENT OF CYANIDE BYPRODUCT IN NITRILE PRODUCTION

Abraham P. Gelbein, Plainfield, and Joon T. Kwon, Freehold Township, Monmouth County, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Jan. 6, 1978, Ser. No. 867,520
Int. Cl.² C07C *120/14*
U.S. Cl. 423—358 **16 Claims**

1. In a process for producing nitriles wherein a nitrile production effluent includes gaseous ammonia, carbon dioxide and hydrogen cyanide, the improvement comprising:

a. recovering from the nitrile production effluent hydrogen cyanide and at least a portion of the ammonia and carbon dioxide as an aqueous solution, said aqueous solution containing ammonium carbonate and ammonium cyanide;

b. hydrolyzing cyanide present in said aqueous solution to ammonia and carbon monoxide;

c. stripping carbon monoxide, carbon dioxide, water vapor and un-hydrolyzed hydrogen cyanide from the aqueous solution produced in step b to recover water free of cyanide and a stripped gas;

d. separating the stripped gas into a gaseous stream of ammonia and carbon monoxide and an aqueous solution containing ammonium carbonate and ammonium cyanide;

e. stripping carbon dioxide free of hydrogen cyanide from said aqueous solution from step d; and

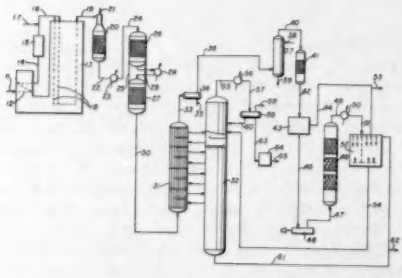
f. passing at least a portion of the aqueous solution from step e to step b.

4,148,866

LOW ENERGY AMMONIA SYNTHESIS PROCESS

Colman L. Becker, Houston, Tex., assignor to Pullman Incorporated, Chicago, Ill.

Filed Oct. 4, 1976, Ser. No. 729,459
Int. Cl.² C01C *1/02, 1/04*
U.S. Cl. 423—359 **15 Claims**



1. In a process for the production of ammonia which comprises a series of process steps including producing a raw synthesis gas and converting the carbon monoxide in said raw synthesis gas to carbon dioxide for producing a synthesis gas containing a mixture of hydrogen and nitrogen in approximately a 3 to 1 ratio, the improvement which comprises:

reacting said hydrogen and nitrogen in an ammonia synthesis converter at pressures less than 100 atmospheres to produce an effluent containing ammonia;

scrubbing said effluent with water to form a water-ammonia mixture;

distilling ammonia from said water-ammonia mixture by means of a distillation column heated by removing liquid therefrom at several levels; and

passing in indirect heat exchange with said liquid the effluent from one of said process steps.

4,148,867

PRODUCTION OF SYNTHETIC FLUORSPAR

Siegfried Schneider, Cologne, and Hans Niederprüm, Monheim, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 12, 1976, Ser. No. 704,252
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1975, 2533128
Int. Cl.² C01F *11/22; C01B 33/14*
U.S. Cl. 423—490 **10 Claims**

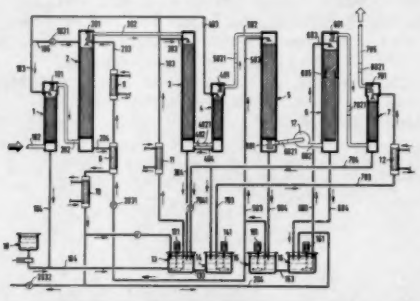
1. A process for the production of synthetic fluorspar of low silicon dioxide content wherein hexafluosilicic acid is added in an amount ranging from slightly below up to about stoichiometric amount to an aqueous calcium carbonate suspension at a temperature from about 0° C. to 40° C., and the calcium fluoride formed is separated off as a sludge from the dilute silica sol and optionally washed out, the improvement which comprises reacting the calcium carbonate with the hexafluosilicic acid in such a way that the pH-value of the fully reacted solution amounts to between about 3.6 to 4.6, and adding a fast-reacting proton acceptor to the reaction mixture immediately before separation of the calcium fluoride in amount sufficient to raise the pH to about 5.0 to 6.4, whereby the calcium fluoride sludge can be readily separated from the silica sol prior to gelation of the silica.

4,148,868

PROCESS FOR SEPARATING SO_2 FROM A CURRENT OF GAS CONTAINING THE SAME

Volker Fattinger, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 664,601, Mar. 8, 1976, abandoned. This application Oct. 3, 1977, Ser. No. 838,707
Claims priority, application Switzerland, Mar. 10, 1975, 3000/75
Int. Cl.² C01B *17/82*
U.S. Cl. 423—523 **17 Claims**



1. A process for producing H_2SO_4 from a cold, moist current of gas containing up to about 8% by volume of SO_2 by the nitrogen oxide process in a system of reaction zones, which process produces a strong sulfuric acid having a H_2SO_4-content of at least 70%, by weight, in which process the current of SO_2-containing gas having a stoichiometric oxygen content for carrying out this process in practice is caused to flow, at substantially atmospheric pressure, successively

(a) through an acid denitration zone;

(b) through an SO_2-processing zone in which said current is brought into intimate contact with dilute sulfuric acid having a concentration of less than 70% H_2SO_4 and being substantially free from nitrose, said dilute acid flowing in a cycle through the SO_2-processing zone; and said SO_2-processing zone being of sufficient length to have SO_2 present therein substantially to the end thereof, while substantially avoiding dissolution of nitrogen oxides in said cycle of dilute acid;

the dilute acid cycling through the SO_2-processing zone

being intermittently introduced into said denitration zone to regulate the concentration of the acid therein;

(c) through a nitrogen oxides-absorption zone; all of the nitrose-containing acid exiting from said absorption zone being indirectly heated to a temperature above 60° C. and then introduced into said denitration zone by-passing said SO_2-processing zone and having nitrogen oxides withdrawn in said denitration zone from said nitrose-containing acid into the gas current;

thereby obtaining a denitrated sulfuric acid exiting from the denitration zone which acid has an H_2SO_4—concentration of between 70 and 85% by weight, is substantially free from nitrose and is withdrawable from said system as product acid;

a portion of said denitrated sulfuric acid being conveyed through said nitrogen oxides absorption zone and absorbing nitrogen oxides from the gas current in said absorption zone;

said process further comprising the steps of

(α) removing a portion of the said dilute sulfuric acid, substantially free from nitrose, from said SO_2-processing zone and bringing the last-mentioned portion into contact with a cold moist current of said SO_2-containing gas in a pretreatment zone upstream of said denitration zone in said system;

(β) reintroducing a portion of the acid formed in (α) which is more diluted by moisture from said gas and which is free from nitrose into the sulfuric acid cycling in the SO_2-processing zone, this portion of the acid carrying the portion of the moisture content of the SO_2-containing gas thereby diluting the sulfuric acid and thus bypassing the gas flow-path leading to the denitration zone; and

(γ) at least when the water-content of the more diluted sulfuric acid exiting from the pretreatment zone increases to the extent that the H_2SO_4-content of the denitrated sulfuric acid leaving the denitration zone drops below 70% by weight of H_2SO_4, removing a portion of the dilute sulfuric acid from the pre-treatment tower before it is added to the acid cycling in the SO_2 processing zone and conveying the last-mentioned portion through an acid-dehydration zone, wherein it is heated to evaporate water therefrom, and then returning the resulting more concentrated acid to the SO_2 processing zone.

4,148,869
IMMUNOLOGICAL REAGENT AND METHOD OF USING SAME

Carlton D. Deaton, Garden Grove, Calif., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 555,908, Mar. 6, 1975, abandoned. This application Sep. 19, 1975, Ser. No. 615,024

Int. Cl.² G01N *21/00, 23/00, 31/00;* **B01D** *21/01*

U.S. Cl. 424—1 **42 Claims**

1. A reagent for clinical nephelometric analysis comprising an aqueous solution of an antiserum to the component to be assayed and a mixture of about 20% to about 40% by weight polyethylene glycol having a molecular weight of about 200 to about 10,000 and about 80% to about 60% by weight of a block copolymer of ethylene oxide and polyoxypropylene containing at least 50% ethylene oxide.

5. In an immunological assaying method which involves a reaction between an antigen and an antibody to form an antigen-antibody complex, the improvement which comprises carrying out said reaction in the presence of a reagent comprising an aqueous solution containing about 3 to 6% by weight of a mixture of polyethylene glycol having a molecular weight of about 200 to about 10,000 and a nonionic surfactant other than polyethylene glycol wherein said mixture contains about 10% to 90% by weight polyethylene glycol and about 10% to 90% by weight nonionic surfactant and said solution has a calculated HLB value of about 0.7 to 1.7.

18. In an immunological assaying method which involves a reaction between an antigen and an antibody to form an antigen-antibody complex, the improvement which comprises carrying out said reaction in the presence of a reagent comprising an aqueous solution containing about 3 to 6% by weight of a mixture of polyethylene glycol having a molecular weight of about 200 to about 10,000 and a nonionic surfactant selected from the group consisting of:

(a) a block copolymer of ethylene oxide and polyoxypropylene,

(b) straight chain primary aliphatic oxyalkylated alcohols, and

(c) glycerol monostearate, wherein said mixture contains about 10% to 90% by weight polyethylene glycol and about 10% to 90% by weight nonionic surfactant and said solution has a calculated HLB value of about 0.7 to 1.7.

4,148,870
OSMIUM COMPOUNDS

Paul C. Hydes, and Michael J. Cleare, both of London, England, assignors to Johnson, Matthey & Co., Limited, London, England

Division of Ser. No. 702,132, Jul. 2, 1976, Pat. No. 4,100,158. This application May 15, 1978, Ser. No. 905,791

Claims priority, application United Kingdom, Jul. 9, 1975, 28877/75

Int. Cl.² G01N *1/00, 1/28, 1/30*

U.S. Cl. 424—3 **3 Claims**

1. In a method of fixing or staining cells in the preparation of specimens for examination by electron microscopy, in which the cells are treated with osmium tetroxide, the improvement comprising employing for said osmium tetroxide a complex of osmium tetroxide and a compound having a heterocylic ring containing one or two tertiary nitrogen atoms said compound being selected from the group consisting of pyridazine, phthalazine, isoquinoline, triethylenediamine, and quinuclidine.

4,148,871
SUSTAINED SUBDERMAL DELIVERY OF DRUGS USING POLY(ε-CAPROLACTONE) AND ITS COPOLYMERS

Colin G. Pitt, and Anton E. Schindler, both of RTI, P. O. Box 12194, Research Triangle Park, N.C. 27709

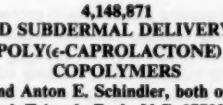
Filed Oct. 11, 1977, Ser. No. 840,989

Int. Cl.² A61K *31/74, 9/52*

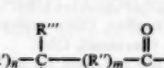
U.S. Cl. 424—19 **15 Claims**

1. A subdermally implantable pharmaceutical composition comprising

(a) a surgically implantable device in the form of a macrocapsule having a hollow cavity and being composed of a polymer or copolymer having repeating units of the formula



wherein R′ and R″ are lower alkylene groups of up to six carbon atoms; n and are 0 or 1; and R‴ and R⁗ are either hydrogen or a lower alkyl group of from 1 to about 6 carbon atoms; at least 5% of the polymer or copolymer being formed of the repeating unit



derived from ε-hydroxy caproic acid, where m=0, n=1, R′=$(CH_2)_4$, and R‴ and R⁗=H, and

(b) a drug contained within the hollow cavity of said device; said device, comprosed of said polymer or copolymer, having a sufficiently high permeability to the drug to enable it to be used in said macrocapsule form for subder-

mal implantation, being capable of holding a high drug content which can be released in an effective amount at a sustained constant rate for a long time, and which is capable of biodegrading after the drug supply has become depleted.

4,148,872

PLAQUE INHIBITING COMPOSITION AND METHOD

Austin C. Wagenknecht, deceased, late of Hennepin County, Minn. (by Don Austin Wagenknecht, personal representative); George V. Daravingas, Edina, and William E. Koski, Minneapolis, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Nov. 28, 1977, Ser. No. 855,525
Int. Cl.[2] A61K *9/68, 7/16*
U.S. Cl. 424—48 **13 Claims**

1. A chewing gum comprising:
(a) from about 0.001% to about 15% by weight of a di(2-ethylhexyl)-sulfosuccinate salt;
(b) from about 0.001% to about 15% by weight monocaprylin; and
(c) from about 0.05% to about 10% by weight of a plaque inhibiting flavor selected from the group consisting of cinnamon oil, peppermint oil and spearmint oil and mixtures thereof; and
(d) from about 10% to about 95% by weight of a gum base.

4,148,873

METHOD FOR TREATING THE SKIN WITH EXTRACTS OF HOPS

Joseph L. Owades, Boston, Mass., assignor to S. S. Steiner, Inc., New York, N.Y.

Filed Nov. 5, 1976, Ser. No. 739,304
Int. Cl.[2] A61K *7/42*
U.S. Cl. 424—59 **6 Claims**

1. A method of treating human skin to protect said skin from erythema-producing sunlight radiation while promoting tanning thereof, said method comprises applying topically to said skin in need of said treating, a sunscreening composition comprising an active sunscreening agent effective in absorbing erythema-producing ultraviolet radiation while transmitting ultraviolet radiation which promotes tanning, and a physiologically acceptable carrier for said sunscreening agent, said sunscreening agent comprising at least about 2% by weight, based on the total weight of said composition, of an organic solvent soluble extract of hops, said extract containing humulones and lupulones extracted from said hops.

4,148,874

DERMATOLOGICAL COMPOSITIONS

Donald E. Smith, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 805,668, Jun. 13, 1977, which is a division of Ser. No. 647,943, Jan. 12, 1976, Pat. No. 4,046,886, which is a division of Ser. No. 541,902, Jan. 17, 1975, Pat. No. 3,952,099, which is a division of Ser. No. 340,787, Mar. 13, 1973, Pat. No. 3,896,238, which is a continuation-in-part of Ser. No. 241,404, Apr. 5, 1972, abandoned. This application May 30, 1978, Ser. No. 910,269
Int. Cl.[2] A61K *7/34, 7/36, 7/38, 31/10*
U.S. Cl. 424—66 **1 Claim**

1. A composition in liquid or semi-liquid form adopted to topical application to animal tissue comprising:
(1) from about 0.05% to about 15% by weight of an astringent metal salt selected from the group consisting of
aluminum chlorhydrate,
zirconium oxychloride,
zinc chloride,
aluminum tribromide,
aluminum chloride ethanolate, and
a 1:1 mixture by weight of zirconium oxychloride and aluminum chlorhydrate;
(2) from about 0.1% to about 1.0 by weight of a sugar ester selected from the group consisting of
sucrose monooctanoate,
sucrose monodecanoate,
sucrose monolaurate,
sucrose myristate,
sucrose monopalmitate,
sucrose monostearate,
sucrose monooleate, and
sucrose dioleate; and
(3) from about 0.1% to about 10.0% by weight of a sulfoxide compound selected from the group consisting of
octyl methyl sulfoxide,
nonyl methyl sulfoxide,
decyl methyl sulfoxide,
undecyl methyl sulfoxide,
dodecyl methyl sulfoxide,
2-hydroxydecyl methyl sulfoxide,
2-hydroxyundecyl methyl sulfoxide,
2-hydroxydodecyl methyl sulfoxide.

4,148,875

VISIBLE ACTION GEL TONER

Gabriel Barnett, New York; Nathan Gershaw, Commack, and Jack J. Mausner, East Hills, all of N.Y., assignors to Helena Rubinstein, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 611,435, Sep. 5, 1975, Pat. No. 4,087,555. This application Mar. 28, 1977, Ser. No. 781,844
Int. Cl.[2] A61K *31/78;* **B01J** *13/00*
U.S. Cl. 424—81 **5 Claims**

1. An aqueous non-oily gel toner composition for use on the skin consisting essentially of a carrier and an encapsulated base;
(A) said carrier consisting essentially of an effective amount of each of an emulsifier, a dispersing agent, a non-ionic surfactant and a humectant, a gel-forming amount of hectorite clay, an effective amount of a peptizer for said clay, and the balance water; and
(B) said encapsulated active base consisting essentially of milk protein, hectorite clay, a sufficient amount of a polar group affording organic compound to form water insoluble particles by reaction with said hectorite clay, a sufficient amount of peptizer for said clay, and water, said polar group affording compound being (1) characterized as being reactable with said hectorite clay to form water insoluble particles having a size above colloidal dimensions when added to an aqueous colloidal solution of synthetic hectorite clay and tetrasodium pyrophosphate and (2) selected from the group consisting of a simple organic compound having at least one polar group and an organic hydrophilic colloid.

4,148,876

BIOLOGICAL PREPARATIONS

June D. Almeida, London, and David C. Edwards, Beckenham, both of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 727,610, Sep. 28, 1976, abandoned. This application Mar. 1, 1978, Ser. No. 882,445
Int. Cl.[2] A61K *39/12, 39/18, 39/20, 39/22*
U.S. Cl. 424—89 **12 Claims**

1. An antigenic virosome preparation containing a plurality of microvesicles which microvesicles are unilamellar bodies having a single lipid bilayer upon the exterior surface of which is bound by hydrophobic bonding an antigenic protein, said antigenic protein being a hemagglutinin and neuraminidase sub-unit of a protective surface antigen derived from a myxovirus and having a hydrophobic region.

4,148,877

FRACTION CAPABLE OF INDUCING IN VIVO A RESISTANCE TO BACTERIAL INFECTIONS, PROCESS FOR OBTAINING SAID FRACTION FROM BACTERIA AND DRUGS CONTAINING SAID FRACTION

Jean Choay, Paris, and Mireille Sakouhi nee Cousin, Gif-sur-Yvette, both of France, assignors to Choay S. A., Paris, France

Filed Dec. 21, 1976, Ser. No. 752,993
Claims priority, application France, Dec. 29, 1975, 75 40041; May 19, 1976, 76 15093
Int. Cl.[2] A61K *39/02;* C12D *13/10*
U.S. Cl. 424—92 12 Claims

1. A method for obtaining a non-toxic, antibacterial product of the gram-negative bacteria enterobacteriaceae which comprises:

enzymatically splitting the water-soluble constituents of the exo- and endocellular components of the cell walls of said gram-negative bacteria in an aqueous solution at a pH in the range of about 5 to 9.5, at a temperature up to about 100° C., which cell constituent has a component of a molecular weight not below about 10,000, has the antibacterial property of the endotoxin LPS, is toxic and is stable to prolonged heating to at least 108° C.,

with an enzyme capable irreversibly enzymatically removing the components which have a molecular weight in the range from about 500 to about 10,000 from those components having a molecular weight above about 12,000, the enzyme being selected from the group consisting of desoxyribonuclease and lipase,

maintaining the pH in the range of about 5 to 9.5 and at a temperature below about 100° C. and at which the enzyme is active, forming a portion which contains the lower molecular weight components from about 500 to 12,000, and separating the product which has a molecular weight in the range of about 500 to 12,000 by filtration through a membrane which retains the product of a molecular weight above about 10,000 and separates the product of a molecular weight from about 500 to 10,000,

said product being water-soluble, virtually free of toxicity, being antibacterial, not an antigen, stable when heated at a temperature in the range of about 103–107° C. but unstable upon heating about 103°–107°.

7. A biologically active product which is antibacterial and non-toxic, which product is the water-soluble constituent of a molecular weight in the range of about 500 to about 10,000 and of a UV absorption spectrum maximum at a wavelength of from 254 to 270 nm, the exo- and endocellular constituents of the cell walls of the gram-negative bacteria enterobacteriaceae, which constituents have a molecular weight component of a molecular weight in the range of about 500 to about 10,000 and another above about 10,000, which water-soluble constituents has been enzymatically and irreversibly split and separated from the said component which has a molecular weight above about 10,000 by an enzyme selected from the group consisting of desoxyribonuclease and lipase in an aqueous solution at a temperature not above about 100° C. and at a pH in the range of about 5 to 9.5, and which components has been filtered through a membrane which retained the component of a molecular weight above 12,000 and which product is stable to heating in the range of about 103°–107° C., but not above 107° C.

which product is free of endotoxic shock or lethal effect in intravenous administration to mice at a dosage of 10 micrograms per mouse, which mice have been sensitized intraperitonaleously with 12.5 micrograms of actinomycin D and which product provides antibacterial immunity to 10 mice when administered intraperitonaleously to 10 mice at a dosage up to about 20 micrograms per animal one day prior to being injected with 1.5×10^6 cells of Klebsiella (Klebsiella pneumoniae, ATCC No. 9997).

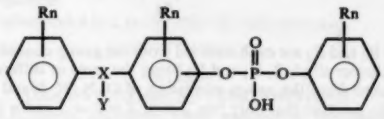
4,148,878

INHIBITION OF PLATELET AGGREGATION WITH SELECTED PHOSPHORIC ACID ESTERS

Eric L. Nelson, Santa Ana, Calif., assignor to Nelson Research & Development Company, Irvine, Calif.

Filed Dec. 23, 1977, Ser. No. 864,020
Int. Cl.[2] A61K *35/14, 31/685, 31/66*
U.S. Cl. 424—101 5 Claims

1. A process for inhibiting platelet aggregation in in vitro platelet systems comprising the addition of an effective amount of a compound of the formula:



wherein X is an alkyl or alkenyl chain having 2–8 carbon atoms, one of which carbon atoms may be in the form of a carbonyl group, Y is H, alkyl, dialkylaminoethyl, aryl, aralkyl or aryl and aralkyl substituted with one or more R, and R is H, lower alkyl, lower alkoxy, halogen, CF_3, NO_2, OH, CN, $COOR_1$,

$NHCOR_1$, NR_1R_2 or

where R_1 and R_2 are each selected from the group consisting of H and lower alkyl; R, R_1 and R_2 being the same or different and n is 0–5; and pharmaceutically acceptable salts thereof, to in vitro platelet systems.

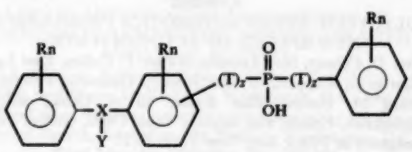
4,148,879

INHIBITION OF PLATELET AGGREGATION WITH SELECTED PHOSPHONIC AND PHOSPHINIC ACID ESTERS

Eric L. Nelson, Santa Ana, Calif., assignor to Nelson Research & Development Company, Irvine, Calif.

Filed Dec. 23, 1977, Ser. No. 864,017
Int. Cl.[2] A61K *35/14, 31/685, 31/66*
U.S. Cl. 424—101 5 Claims

1. A process for inhibiting platelet aggregation in in vitro platelet systems comprising the addition of an effective amount of a compound of the formula:



wherein X is an alkyl or alkenyl chain having 2–8 carbon atoms, one of which carbon atoms may be in the form of a carbonyl group, Y is H, alkyl, dialkylaminoethyl, aryl, aralkyl or aryl and aralkyl substituted with one or more R, and R is H, lower alkyl, lower alkoxy, halogen, CF_3, NO_2, OH, CN, $COOR_1$,

$NHCOR_1$, NR_1R_2 or

where R_1 and R_2 are each selected from the group consisting of H and lower alkyl; R, R_1 and R_2 being the same or different, T is selected from the group consisting of O, N, H, S and CH_2, with the proviso that only one T is 0; Z is 0 or 1 and n is 0–5; and pharmaceutically acceptable salts thereof, to in vitro platelet systems.

4,148,880

MIXTURE OF ANTIBIOTICS PRODUCED BY A SPECIES OF ACTINOPLANES

Walter D. Celmer, New London; Walter P. Cullen, East Lyme; Charles E. Moppett; John B. Routien, both of Groton, all of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 604,260, Aug. 13, 1975, Pat. No. 4,038,383, which is a continuation-in-part of Ser. No. 541,800, Jan. 17, 1975, abandoned, which is a continuation-in-part of Ser. No. 461,298, Apr. 16, 1974, abandoned. This application Dec. 16, 1976, Ser. No. 751,032

Int. Cl.[2] A61K *35/00*

U.S. Cl. 424—119 **3 Claims**

2. A process for increasing growth and improving feed efficiency in non-ruminant animals which comprises feeding said animals a feed composition containing from about 10 to 100 ppm of Compound 36,926 with an effective growth producing amount of a compound selected from the group consisting of Compound 37,277, Compound 37,932 and mixture thereof.

4,148,881

MITICIDAL COMPOSITIONS COMPRISING ANTIBIOTIC K-41

Takeo Ishiguro, Kusatsu, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Filed Jul. 21, 1977, Ser. No. 818,098

Claims priority, application Japan, Aug. 6, 1976, 51/94128

Int. Cl.[2] A01N *9/00*

U.S. Cl. 424—120 **5 Claims**

1. A method for controlling mites which attack plants, which comprises applying to the miles a miticidal amount of a composition containing a miticidal amount of K-41 or a miticidal salt thereof, as an active ingredient, and a carrier therefor.

4,148,882

POLYCYCLIC ETHER ANTIBIOTICS PRODUCED BY NEW SPECIES OF ACTINOMYCETE

Walter D. Celmer, New London; Walter P. Cullen, East Lyme; Charles E. Moppett, Mystic; John R. Oscarson, Pawcatuck; Liang H. Huang, East Lyme, all of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Jun. 24, 1977, Ser. No. 809,620

Int. Cl.[2] A61K *35/00*

U.S. Cl. 424—122 **9 Claims**

1. The antibiotic Compound 47,433, or a pharmaceutically acceptable cationic salt thereof, said antibiotic when in the form as the crystalline free acid is soluble in methanol, acetone, chloroform, methylisobutyl ketone, ethyl acetate and insoluble in water; has a melting point of 89°–99° C.; an optical rotation of $[\alpha]_D = +16°$ at a concentration of 1% in methanol; an average composition by weight of 64.92% carbon, 9.73% hydrogen and 25.35% oxygen (by difference); and when pelleted in KBr, exhibits characteristic absorption in the infrared region at the following wavelengths in microns: 2.87, 3.42, 5.77, 6.85, 7.30, 8.05, 8.60, 9.20, 10.15, 10.53 and 11.45.

4,148,883

ANTIBIOTICS PRODUCED BY NEW SPECIES OF NOCARDIA

Walter D. Celmer, New London; Walter P. Cullen, East Lyme; Charles E. Moppett, Mystic; Mark T. Jefferson, Waterford; Liang H. Huang, East Lyme, all of Conn.; Riichiro Shibakawa, Handa, and Junsuki Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Aug. 18, 1977, Ser. No. 825,563

Int. Cl.[2] A61K *35/00*

U.S. Cl. 424—122 **3 Claims**

2. Antibiotic Compound 47,444 which is soluble in methanol, ethanol, chloroform, methylene chloride, acetone, methylisobutyl ketone and ethyl acetate; insoluble in heptane and water; has absorption maximum in methanol in the ultraviolet light region of the spectrum at 265 nm with $E_{1cm}^{1\%}$ value of 320; has the molecular formula of $C_{28}H_{37}NO_8$; has an optical rotation of $[\alpha]_D = +49°$ at a concentration of 1% in methanol; and when pelleted in KBr, exhibits characteristic absorption in the infrared region of the following wavelengths in microns: 2.90, 3.40, 5.76, 5.87, 6.40, 6.85, 7.05, 7.63, 8.53, 9.0, 10.58, 11.34 and 13.35.

4,148,884

CERTAIN LODOPHOR DISINFECTANT COMPOSITIONS

Douglas E. Thorogood, Wingate House, Shaftesbury Ave., London W.C.1, England

Continuation of Ser. No. 510,752, Aug. 30, 1974, abandoned, which is a continuation of Ser. No. 272,008, Jul. 14, 1972, abandoned, which is a continuation of Ser. No. 888,926, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 854,793, Sep. 2, 1969, abandoned, which is a continuation-in-part of Ser. No. 727,376, May 7, 1968, abandoned, which is a continuation-in-part of Ser. No. 541,517, Apr. 11, 1966, abandoned. This application May 16, 1977, Ser. No. 797,184

Int. Cl.[2] A01N *11/00;* **A61K** *33/18*

U.S. Cl. 424—150 **11 Claims**

1. A bactericidal composition comprising a bactericidal amount of a complex formed by mixing at a reactive temperature in a manner to cause intimate contact of the reactant with each other a reactive amount of a salt of an alkylamine, wherein the alkyl group contains between 8 and 18 carbon atoms, with a reactive amount of a nonionic surface active agent and with a bactericidal amount of a halogen which is iodine, bromine, chlorine or an interhalogen or iodine, bromine, fluorine, or chlorine, said complex characterized by

(1) a negative reaction to standard starch iodine test for free halogen,

(2) stability or no loss of halogen when boiled in an aqueous solution, and

(3) having bactericidal activity.

4,148,885

IMMUNOSTIMULANT MEDICINE

Gerard E. Renoux, and Micheline Renoux, both of Tours, France, assignors to Institut Merieux, France

Continuation-in-part of Ser. No. 509,318, Sep. 25, 1974, abandoned. This application May 18, 1976, Ser. No. 687,505

Claims priority, application France, Sep. 25, 1973, 73 34328

Int. Cl.[2] A61K *33/04*

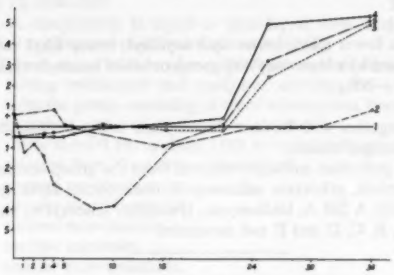
U.S. Cl. 424—162 **8 Claims**

1. A process for stimulating the immunity of a living organism comprising orally or subcutaneously administering to said

organism in an amount effective to stimulate immunity an immunostimulant medicine consisting essentially of sodium diethyldithiocarbamate and an excipient therefor, said sodium diethyldithiocarbamate being administered at a dosage, relative to the weight of the receptor organism, which corresponds to a dosage which produces, in mice having received an injection of sheep red blood corpuscles, a stimulation index equal to or greater than 1.6.

3. A process for stimulating the immunity of a living organism comprising orally or subcutaneously administering to said organism in an amount effective to stimulate immunity an immunostimulant medicine consisting essentially of sodium thiomalate and an excipient therefor, said sodium thiomalate being administered at a dosage, relative to the weight of the receptor organism, which corresponds to a dosage which produces, in mice having received an injection of sheep red blood corpuscles, a stimulation index equal to or greater than 1.6.

5. A process for stimulating the immunity of a living organism comprising orally or subcutaneously administering to said organism in an amount effective to stimulate immunity an immunostimulant medicine consisting essentially of sodium thiosulfate and an excipient therefor, said sodium thiosulfate being administered at a dosage, relative to the weight of the



receptor organism, which corresponds to a dosage which produces, in mice having received an injection of sheep red blood corpuscles, a stimulation index equal to or greater than 1.6.

7. A process for stimulating the immunity of a living organism comprising orally or subcutaneously administering to said organism in an amount effective to stimulate immunity an immunostimulant medicine consisting essentially of sodium metabisulfite and an excipient therefor, said sodium metabisulfite being administered at a dosage, relative to the weight of the receptor organism, which corresponds to a dosage which produces, in mice having received an injection of sheep red blood corpuscles, a stimulation index equal to or greater than 1.6.

8. A process for stimulating the immunity of a living organism comprising orally or subcutaneously administering to said organism in an amount effective to stimulate immunity an immunostimulant medicine consisting essentially of thiosemicarbazide and an excipient therefor, said thiosemicarbazide being administered at a dosage, relative to the weight of the receptor organism, which corresponds to a dosage which produces, in mice having received an injection of sheep red blood corpuscles, a stimulation index equal to or greater than 1.6.

4,148,886

POLYPEPTIDE POSSESSING THYMIC ACTIVITY

Jean-Francois Bach, and Jean Hamburger, both of Paris, France, assignors to Institute National de la Sante & de la Recherche Medicale (INSERM), France

Division of Ser. No. 725,594, Sep. 22, 1976, which is a continuation of Ser. No. 454,493, Mar. 25, 1974, abandoned. This application Apr. 25, 1978, Ser. No. 900,043

Int. Cl.[2] A61K *37/00*; **C07C** *103/52*

U.S. Cl. 424—177 **3 Claims**

1. Thymic factor polypeptide hormone having the amino acid sequence:

pyroglutamyl-Ala-Lys-Ser-Gln-Gly-Gly-Ser-Asn.

4,148,887

DERMATOLOGICAL COMPOSITIONS

Donald E. Smith, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 805,668, Jun. 13, 1977, which is a division of Ser. No. 647,943, Jan. 12, 1976, Pat. No. 4,046,886, which is a division of Ser. No. 541,902, Jan. 17, 1975, Pat. No. 3,952,099, which is a division of Ser. No. 340,787, Mar. 13, 1973, Pat. No. 3,896,238, which is a continuation-in-part of Ser. No. 241,404, Apr. 5, 1972, abandoned. This application May 30, 1978, Ser. No. 910,318

Int. Cl.[2] A61K *31/10, 31/70, 47/00, 31/17*

U.S. Cl. 424—180 **1 Claim**

1. A composition in liquid or semi-liquid form adopted to topical application to animal tissue comprising:

(1) from about 0.1% to about 10% by weight of a pharmacologically active agent which is an anti-metabolite selected from the group consisting of Methotrexate, 5-methyldeoxycytidine, puromycin, arabinosyl cytosine and hydroxyurea; and

(2) from about 0.1% to about 1.0% by weight of a sugar ester selected from the group consisting of
sucrose monooctanoate,
sucrose monodecanoate,
sucrose monolaurate,
sucrose myristate,
sucrose monopalmitate,
sucrose monostearate,
sucrose monooleate, and
sucrose dioleate; and

(3) from about 0.1% to about 10.0% by weight of a sulfoxide compound selected from the group consisting of
octyl methyl sulfoxide,
nonyl methyl sulfoxide,
decyl methyl sulfoxide,
undecyl methyl sulfoxide,
dodecyl methyl sulfoxide,
2-hydroxydecyl methyl sulfoxide,
2-hydroxyundecyl methyl sulfoxide,
2-hydroxydodecyl methyl sulfoxide.

4,148,888

3-DEAZAADENOSINE AS AN INHIBITOR OF ADENOSYLHOMOCYSTEINE HYDROLASE WITH ANTIVIRAL ACTIVITY

Giulio L. Cantoni, Bethesda; Peter K. Chiang, Kensington, both of Md., and Henry H. Richards, Washington, D.C., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Mar. 13, 1978, Ser. No. 886,106

Int. Cl.[2] A61K *31/70*; **C12B** *9/00*; **C12L** *1/00*

U.S. Cl. 424—180 **7 Claims**

1. A method of producing an antiviral effect in a tissue culture system comprising applying to said tissue culture system an effective antiviral amount of 3-deazaadenosine.

6. A method of inhibiting adenosylhomocysteine hydrolase comprising administering to a rat an effective amount of from

100–200 mg/kg of body weight of 3-deazaadenosine to inhibit said adenosylhomocysteine hydrolase.

7. An enzyme inhibitor system consisting essentially of adenosylhomocysteine hydrolase of beef liver and 3-deazaadenosine as an active ingredient in effective amounts of from 0.001 to 0.008 mM(I_{50}) as an inhibitor of said adenosylhomocysteine hydrolase.

4,148,889

TREATMENT OF VIRAL INFECTIONS

Vidya S. Gupta, Saskatoon, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Dec. 8, 1976, Ser. No. 748,695
Int. Cl.[2] A61K *31/70*
U.S. Cl. 424—180 **9 Claims**

1. A method of treating infections of herpes simplex viruses in animals comprising

administering 5-methoxymethyldeoxyuridine parenterally or topically to said animal an amount effective to alleviate the symptoms of said viral infection.

4,148,890

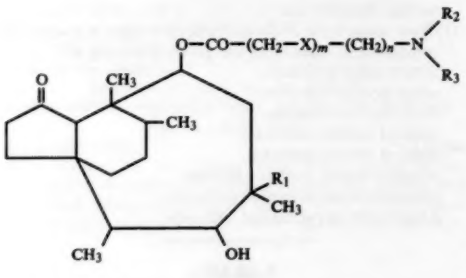
ANTIBIOTIC COMPOSITIONS FOR TREATING COCCIDIOSIS

Rudolf Czok, Mödling; Josef G. Meingassner, Vienna; Hubert Mieth, Wiener Neudorf, and Eberhard Schutze, Vienna, all of Austria, assignors to Sandoz Ltd., Basel, Switzerland

Filed Dec. 20, 1977, Ser. No. 862,365
Claims priority, application Switzerland, Dec. 23, 1976, 16258/76
Int. Cl.[2] A61K *31/71, 35/00, 31/22*
U.S. Cl. 424—181 **10 Claims**

1. A veterinary composition for treating coccidiosis comprising in effective amounts a mixture of a compound of formula I

I



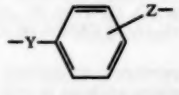
in which either

(1) R_1 is ethyl or vinyl

n is a whole number from 2 to 5

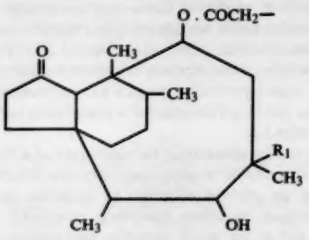
m is 0 or 1

X is —O—, —S— a group



or a group —NR_4— in which Y and Z either are both —S— or one is —S— and the other is —O—

and R_4 is hydrogen or a group of formula



in which R_1 is as defined above,

and

R_2 and R_3 either

(a) are both alkyl, or

(b) together with the nitrogen atom form a heterocyclic ring which may contain as a further heteroatom —O—, —S— or a group —NR_5— in which R_5 is lower alkyl or lower hydroxyalkyl, or

(c) together with the nitrogen atom form a piperazinyl group in which the second nitrogen atom is substituted by a group R_6 in which R_6 is a lower alkyl group substituted by a lower acyloxy group, or is a lower benzoyloxyalkyl group,

or

(2) R_1 is as defined above

n=2

m=1

R_3 is lower alkyl, lower hydroxyalkyl, lower alkyl substituted by a lower acyloxy group or lower benzoyloxyalkyl,

X is —NR_4—

and

R_2 together with R_4 forms an ethylene bridge between both nitrogen atoms,

with a polyether antibiotic selected from the group consisting of nigericin, grisorixin, salimonycin, dianemycin, septamycin, antibiotic A 204 A, laidlomycin, lysocellin, lonomycin, lasalocid, A, B, C, D and E and monensin.

4,148,891

ANTIFUNGAL PREPARATIONS

Dirk A. Smink, Leiderdorp, Netherlands, assignor to Gist-Brocades N.V., Delf, Netherlands

Continuation of Ser. No. 742,659, Nov. 17, 1976, abandoned, which is a continuation of Ser. No. 590,045, Jun. 25, 1975, abandoned. This application Mar. 6, 1978, Ser. No. 883,681
Claims priority, application United Kingdom, Jul. 3, 1974, 29503/74; Feb. 14, 1975, 06450/75
Int. Cl.[2] A01N *9/00;* **A61K** *35/74*
U.S. Cl. 424—181 **26 Claims**

1. An antifungel composition for use on agricultural products comprising 0.05 to about 0.5% by weight of a polyene antibiotic selected from the group consisting of natamycin, aureofungin, lucensomycin and the alkali metal salts, alkaline earth metal salts or lower alkyl esters thereof to prevent or inhibit mold growth on the agricultural products dissolved in a mixture of 10 to 99% by weight of a lower alkanol and 0.05 to 5% by weight of a lower alkanoic acid.

4,148,892

MALE ORAL CONTRACEPTIVE

Michael F. Nassar, 8731 Dewey Dr., Garden Grove, Calif. 92641

Filed May 8, 1978, Ser. No. 903,720
Int. Cl.[2] A61K *35/78*
U.S. Cl. 424—195 **6 Claims**

1. A method for preparing a male oral contraceptive containing an active ingredient comprising the steps of

(a) extracting the active ingredient from the plant, *Ecballium*

elaterium, Linn, with a solution of acetone, toluene, hexane and absolute alcohol;
(b) adding a solution of alcoholic potassium hydroxide to the extract solution;
(c) further extracting for the active ingredient with an immiscible solvent;
(d) diluting to a predetermined volume with high ionic strength salt solution;
(e) concentrating the active ingredient from the extract solution by column chromatography;
(f) disiccating the concentrated solution;
(g) mixing the isolated active ingredient with a carrier in the form of a dose for human consumption.

2. The product produced by the process of claim 1.

3. A method for preventing conception by orally administering to human males the product of claim 2.

4,148,893

DERMATOLOGICAL COMPOSITIONS

Donald E. Smith, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 805,668, Jun. 13, 1977, which is a division of Ser. No. 647,943, Jan. 12, 1976, Pat. No. 4,046,886, which is a division of Ser. No. 541,902, Jan. 17, 1975, Pat. No. 3,952,099, which is a division of Ser. No. 340,787, Mar. 13, 1973, Pat. No. 3,896,238, which is a continuation-in-part of Ser. No. 241,404, Apr. 5, 1972, abandoned. This application May 30, 1978, Ser. No. 910,169

Int. Cl.[2] A61K *31/10, 35/78, 47/00*

U.S. Cl. 424—195 **1 Claim**

1. A composition in liquid or semi-liquid form adopted to topical application to animal tissue comprising:
(1) from about 0.1% to about 10% by weight of natural oils having rubifacient and analgesic activity and selected from the group consisting of oil of wintergreen, tincture of camphor, clove oil, and mixtures thereof;
(2) from about 0.1% to about 1.0% by weight of a sugar ester selected from the group consisting of
sucrose monooctanoate,
sucrose monodecanoate,
sucrose monolaurate,
sucrose myristate,
sucrose monopalmitate,
sucrose monostearate,
sucrose monooleate, and
sucrose dioleate; and
(3) from about 0.1% to about 10.0% by weight of a sulfoxide compound selected from the group consisting of
octyl methyl sulfoxide,
nonyl methyl sulfoxide,
decyl methyl sulfoxide,
undecyl methyl sulfoxide,
dodecyl methyl sulfoxide,
2-hydroxydecyl methyl sulfoxide,
2-hydroxyundecyl methyl sulfoxide,
2-hydroxydodecyl methyl sulfoxide.

4,148,894

METHOD OF MAKING MOLTEN SILICON INFILTRATION REACTION PRODUCTS AND PRODUCTS MADE THEREBY

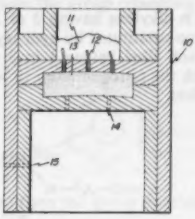
William B. Hillig, Ballston Lake, and Charles R. Morelock, Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 660,261, Feb. 23, 1976, Pat. No. 4,120,731. This application Nov. 7, 1977, Ser. No. 849,186

Int. Cl.[2] B32B *15/16, 15/18*

U.S. Cl. 428—242 **8 Claims**

1. Composites comprising,
(A) a contiguous machinable exterior layer, and
(B) a refractory base structure, where the contiguous machinable exterior layer (A) is the infiltration product of reaction by molten silicon, and a substantially uniform mixture comprising by volume,
from 45% to 90% of particulated carbon having up to an equal proportion by volume, based on the total volume of the mixture, of silicon carbide particles, and
from 10% to 55% of a particulated inorganic material selected from the class consisting of boron nitride, alumi-



num oxide, magnesium oxide, and silicon nitride, substantially inert to molten silicon at temperatures up to 1600° C., having an average particle size of from 0.1 to 2000 microns, and a Mohs hardness value falling within the range of 1–7, and the refractory base structure (B) is a member selected from the class of shaped silicon carbide refractories and the infiltration product of reaction by molten silicon and a carbon fiber preform.

4,148,895

BASICALLY SUBSTITUTED INDOLE DERIVATIVES

Rudolf Lattrell, Konigstein; Wilhelm Bartmann, Neuenhain, and Joachim Kaiser, Camberg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

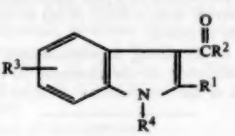
Filed Dec. 16, 1976, Ser. No. 751,084

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557341

Int. Cl.[2] A61K *31/535;* **C07D** *401/14*

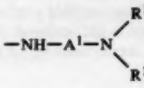
U.S. Cl. 424—248.54 **8 Claims**

1. A compound of the formula

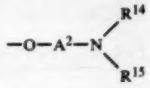


or a physiologically acceptable salt thereof wherein
R^1 is piperidino, morpholino, piperazino, or piperazino substituted in the 4-position by
(a) alkyl having 1 to 3 carbon atoms
(b) β-hydroxyethyl
(c) 2-(1,3-dioxolan-2-yl)-ethyl
(d) phenyl
(e) 3,4-methylene-dioxybenzyl
(f) 2-furoyl
(g) 3,4,5, -trimethoxybenzoyl
(h) alkoxycarbonyl having up to 5 carbon atoms
(i) (2-methyl-2-propenyl)-oxycarbonyl, or
(j) hydroxyalkyl oxycarbonyl having 2 to 5 carbon atoms;
R^2 is hydrogen, dialkylamino having identical alkyl groups each having 1 to 4 carbon atoms, piperazino substituted in the 4-position by
(a) alkyl having 1 to 3 carbon atoms
(b) β-hydroxyethyl
(c) 2-(1,3-dioxolan-2-yl)-ethyl
(d) phenyl, or
(e) 3,4-methylene-dioxy-benzyl, or
R^2 is pyrrolidino, piperidino, 4hydroxy-piperidino, morpho-

lino piperazino, [N-(1-ethinyl-cyclohexyl)]-amino, [N-(4-methylpiperazino)]-amino, [N-(dialkylaminocyclohexyl]-amino wherein each alkyl has 1 to 3 carbon atoms,



wherein A^1 is alkylene having 2 or 3 carbon atoms or such alkylene mono-substituted by hydroxy and R^{12} and R^{13}, taken alone, are each alkyl having 1 to 3 carbon atoms, or, taken together with the nitrogen atom to which they are attached, are morpholino,
or R^2 is



where A^2 is straight-chain alkylene having 2 or 3 carbon atoms and R^{14} and R^{15} taken alone, are respectively hydrogen and cyclohexyl, or, taken together with the nitrogen atom to which they are attached, are morpholino;
R^3 is hydrogen or methoxy; and
R^4 is methyl, phenyl, or methoxyphenyl.

7. A pharmaceutical composition for treating arrhythmia or hypertension, which composition comprises an effective amount of a compound or salt as in claim 1 and a pharmaceutical carrier.

4,148,896

ANTIDEPRESSANT COMBINATION

Dewey H. Smith, Jr., Wilmington, and Vernon G. Vernier, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 22, 1978, Ser. No. 880,067
Int. Cl.[2] A61K *27/00, 3/135*
U.S. Cl. 424—248.56 **10 Claims**

1. A pharmaceutical composition consisting essentially of (a) amantadine or a pharmaceutically suitable acid addition salt thereof, and (b) molindone or a pharmaceutically suitable acid addition salt thereof, with a ratio of (a) to (b) in a range by weight from 20:1 to 0.01:1.

6. A method of alleviating depression in a mammal which comprises administering to the mammal an effective antidepressant amount of the composition of claim 1.

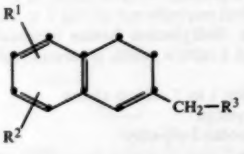
4,148,897

1,2-DIHYDRONAPHTHALENE DERIVATIVES AND PHARMACEUTICAL COMPOSITION

Yoshikazu Oka, Kobe; Katsumi Itoh, Takatsuki; Akio Miyake, Hirakata, and Minoru Hirata, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

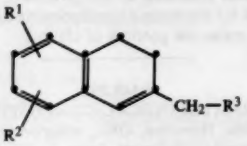
Filed Apr. 20, 1977, Ser. No. 789,278
Claims priority, application Japan, Apr. 29, 1976, 51/48905
Int. Cl.[2] A61K *31/495*; C07D *295/08*
U.S. Cl. 424—250 **12 Claims**

1. A member of the group consisting of (a) a compound of the formula



wherein R^1 and R^2, independently of each other, are hydrogen, nitro, amino, halogen, hydroxyl, lower alkoxy containing up to 5 carbon atoms or aralkyloxy containing a total of 7 to 12 carbon atoms, or R^1 and R^2 may, taken together, form lower alkylenedioxy containing up to 3 carbon atoms, and R^3 is 1-piperazinyl substituted at the N^4-position by aralkyl consisting of a straight-chain lower alkyl of 1 to 3 carbon atoms substituted at the ω-position by one or two phenyls, or by carboxylic acid-derived acyl containing a total of up to 10 carbon atoms, and (b) a physiologically acceptable acid addition salt thereof.

12. A pharmaceutical composition which comprises, as the active ingredient, at least one member of the group consisting of (a) a compound of the formula



wherein R^1 and R^2, independently of each other, are hydrogen, nitro, amino, halogen, hydroxyl, lower alkoxy containing up to 5 carbon atoms or aralkyloxy containing a total of 7 to 12 carbon atoms, or R^1 and R^2 may, taken together, form lower alkylenedioxy containing up to 3 carbon atoms, and R^3 is 1-piperazinyl substituted at the N^4-position by aralkyl consisting of a straight-chain lower alkyl of 1 to 3 carbon atoms substituted at the ω-position by one or two phenyls, or by carboxylic acid-derived acyl containing a total of up to 10 carbon atoms, and (b) a physiologically acceptable acid addition salt thereof, in admixture with pharmaceutically acceptable carrier, excipient or diluent therefor.

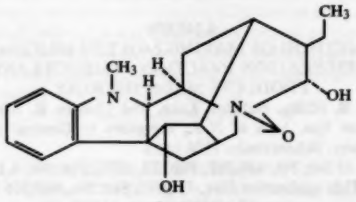
4,148,898

N-OXY-AJMALINE AND THE USE THEREOF IN TREATING CARDIOVASCULAR DISORDERS

Michel G. Koch, Montfermeil, and Jacques M. Peyroux, Paris, both of France, assignors to Societe d'Etudes et de Recherches Enzymologiques et pharmacologiques - Enzypha, Paris, France

Filed Mar. 1, 1978, Ser. No. 882,446
Claims priority, application France, Mar. 16, 1977, 77 07842
Int. Cl.[2] A61K *31/445*; C07D *471/08*
U.S. Cl. 424—256 **2 Claims**

1. N-oxy ajmaline of the formula:



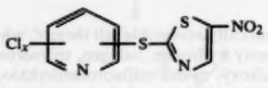
2. A method for the treatment of myocardium infarct and ventricular and supraventricular tachycardia troubles which comprises administering to a host subject afflicted with said troubles a therapeutically effective amount of the compound of claim 1.

4,148,899
((5-NITRO-2-THIAZOLYL)THIO)POLYHALOGENATED PYRIDINES

Craig E. Mixan, Midland, and George A. Burk, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 28, 1978, Ser. No. 919,884
Int. Cl.[2] C07D *417/12;* A01N *9/22*
U.S. Cl. 424—263 5 Claims

1. A compound of the formula



wherein x is 3 or 4.

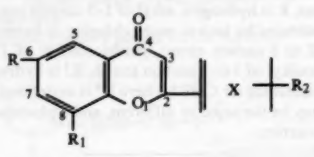
4. A method for controlling bacteria and fungi which comprises applying to said bacteria and fungi or their habitat an antimicrobially-effective amount of the compound of claim 1.

4,148,900
5:6-BENZO-γ-PYRONE DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Gianfederico Doria; Piernicola Giraldi; Francesco Lauria; Maria L. Corno, all of Milan; Piero Sberze, Varese, and Marcello Tibolla, Milan, all of Italy, assignors to Carlo Erba S.p.A., Milan, Italy

Division of Ser. No. 691,488, Jun. 1, 1976, Pat. No. 4,115,567, which is a division of Ser. No. 660,383, Feb. 23, 1976, Pat. No. 4,065,467, which is a continuation of Ser. No. 536,476, Dec. 26, 1974, abandoned. This application Sep. 16, 1977, Ser. No. 833,962
Claims priority, application Italy, Dec. 27, 1973, 32089 A/73; Jul. 4, 1974, 24777 A/74; Jul. 17, 1974, 25244 A/74
Int. Cl.[2] C07D *405/04, 405/06*
U.S. Cl. 424—263 20 Claims

1. A compound of the formula:



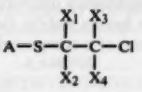
wherein
R is carboxy or —$COOR_3$, wherein R_3 is C_1–C_{12} alkyl;
R_1 is hydrogen, allyl or propyl;
R_2 is hydrogen or —$(O)_m$—R_4, wherein m is zero or one and R_4 is C_1–C_6 alkyl;
X is pyridyl; and
a pharmaceutically acceptable salt thereof.

4,148,901
N-PHENYL OR N-PYRIDYL SULFAMIDES AND METHANESULFONAMIDES

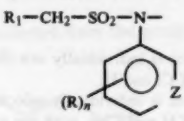
Hans B. Madsen; Per D. Klemmensen, and Hans Kolind-Andersen, all of Lemvig, Denmark, assignors to A/S Cheminova, Lemvig, Denmark

Filed Nov. 17, 1976, Ser. No. 742,592
Claims priority, application United Kingdom, Nov. 25, 1975, 48441; Aug. 27, 1976, 35820
Int. Cl.[2] A01N *9/16, 9/22;* C07C *143/74;* C07D *213/02*
U.S. Cl. 424—263 26 Claims

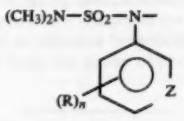
1. Compounds of the formula:



in which at least two of X_1, X_2, X_3 and X_4 are fluorine and any of X_1, X_2, X_3 and X_4 which is not fluorine, is chlorine, and A is a grouping selected from the group consisting of:
(a)



in which R_1 is selected from the group consisting of hydrogen and halogen atoms,
Z is selected from the group consisting of CH and a nitrogen atom,
n is an integer selected from 0 and 1, and
R is selected from the group consisting of alkyl groups having 1 to 6 carbon atoms and halogen atoms; and
(b)



in which Z, n and R have the above-stated meanings.

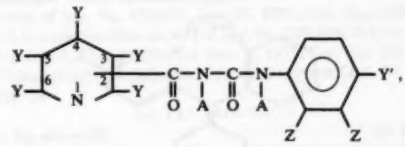
18. A process for preserving wood against fungal attack, which comprises treating the wood with an effective amount of at least one compound of formula I specified in claim 1.

4,148,902
N-[(OPTIONALLY SUBSTITUTED PHENYLAMINO)CARBONYL] PYRIDINE CARBOXAMIDES AND INSECTICIDAL USE THEREOF

Raymond H. Rigterink, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

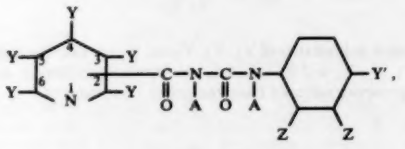
Filed May 13, 1977, Ser. No. 796,647
Int. Cl.[2] A01N *9/22;* C07D *213/81, 213/82*
U.S. Cl. 424—266 40 Claims

1. A compound of the formula



wherein
each Z substituent is individually selected from the group that consists of Cl and H;
each A substituent is individually selected from the group that consists of H and CH_3, with the proviso that both A substituents are not CH_3;
each Y substituent is individually selected from the group consisting of H, Cl, F and Ch_3, with the proviso that all of the Y substituents are not H and no more than 1 Y substituent is CH_3; and
Y′ represents H, Cl, Br, CR_3, MCR_3, C_2R_5 or MC_2R_5, wherein M represents O or S and each R substituent is individually chosen from the group consisting of Cl, F and H.

40. A method of controlling undesired insects which comprises applying to the insects and/or their habitats an insecticidally-effective amount of a compound of the formula



wherein

each Z substituent is individually selected from the group that consists of Cl and H;

each A substituent is individually selected from the group that consists of H and CH_3, with the proviso that both A substituents are not CH_3;

each Y substituent is individually selected from the group consisting of H, Cl, F and CH_3, with the proviso that all of the Y substituents are not H and no more than 1 Y substituent is CH_3; and

Y' represents H, Cl, Br, CR_3, MCR_3, C_2R_5 or MC_2R_5, wherein M represents O or S and each R substituent is individually chosen from the group consisting of Cl, F and H.

4,148,903

ANTIPSYCHOTIC, ANTISEROTONIN AND ANTIHISTAMINIC PYRROLO[2,1-b][3]BENZAZEPINES

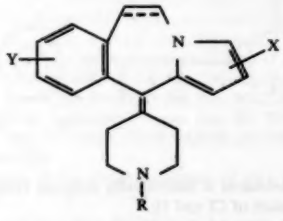
Joseph G. Atkinson, Montreal; Clarence S. Rooney, Beaconsfield; Patrice C. Bélanger, Dollard des Ormeaux, all of Canada, and David C. Remy, North Wales, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 28, 1977, Ser. No. 819,739

Int. Cl.[2] A61K *31/445;* **C07D** *401/04, 401/14*

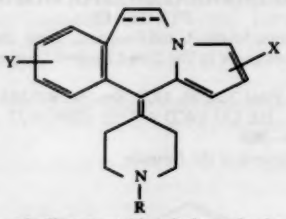
U.S. Cl. 424—267 **12 Claims**

1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein X and Y are independently hydrogen, halogen, trifluoromethyl, lower alkyl, lower alkoxy, cyano, trifluoromethylthio, or trifluoromethylsulfonyl; and R is lower alkyl or cyclopropylmethyl.

10. A method of treating psychoses or disease states associated with abnormally high levels of serotonin or histamine activity which comprises the administration to a patient in need of such treatment an effective antipsychotic, antiserotonin, or antihistamine amount respectively of a compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein X and Y are independently hydrogen, halogen, trifluoromethyl, lower alkyl, lower alkoxy, cyano, trifluoromethylthio, or trifluoromethylsulfonyl; and R is lower alkyl or cyclopropylmethyl.

4,148,904

ANTI-ULCER COMPOSITION

Roger Crossley, Reading, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

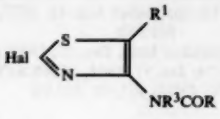
Continuation-in-part of Ser. No. 740,633, Nov. 10, 1976, abandoned. This application May 23, 1977, Ser. No. 799,911

Claims priority, application United Kingdom, Nov. 18, 1975, 47480/75; May 28, 1976, 22478/76; Jun. 10, 1976, 24163/76; Nov. 18, 1975, 5320/77

Int. Cl.[2] A61K *31/425;* **C07D** *277/38*

U.S. Cl. 424—270 **25 Claims**

1. A pharmaceutical composition for use in the treatment of ulcers or hypersecretion comprising a therapeutically effective amount of a compound of formula Ia



(Ia)

where Hal is a halogen atom, R^1 is hydrogen or alkyl of 1–6 carbon atoms, R is hydrogen, alkyl of 1–5 carbon atoms, which may be substituted by two or more chlorine or bromine atoms, alkenyl of 2 to 5 carbon atoms, perfluoroalkyl of 1–5 carbon atoms, cycloalkyl of 3 to 5 carbon atoms, R^3 is hydrogen, alkyl of 1–6 carbon atoms, or COR^4 where R^4 is as defined for R and R and R^4 may be the same or different, and a pharmaceutically acceptable carrier.

4,148,905

PRESERVING AND DISINFECTING METHOD EMPLOYING CERTAIN BIS-OXAZOLIDINES

Heinz Eggensperger, Hamburg, and Karl-Heinz Diehl, Norderstedt, both of Fed. Rep. of Germany, assignors to Sterling Drug Inc., New York, N.Y.

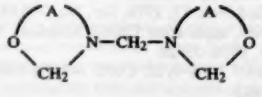
Filed Jul. 27, 1977, Ser. No. 819,245

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1976, 2635389

Int. Cl.[2] A01N *9/22*

U.S. Cl. 424—272 **3 Claims**

1. A method for preventing or retarding the growth of bacteria and fungi in a material susceptible to bacterial and fungal contamination which comprises treating the material with an antibacterially and antifungally effective amount of a compound of the formula



where A is 1,2-alkanediyl having from 2 to 10 carbon atoms.

4,148,906

GROWTH HORMONE INHIBITORS

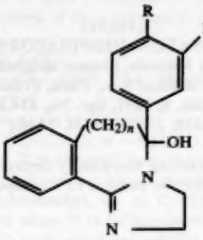
Platon J. Collipp, 299 Vanderbilt Pkway., Dix Hills, N.Y. 11746, assignor to Platon J. Collipp, Dix Hills, N.Y.

Continuation-in-part of Ser. No. 865,905, Dec. 30, 1977, abandoned. This application Apr. 13, 1978, Ser. No. 895,731

Int. Cl.[2] A61Y *31/415, 31/505*

U.S. Cl. 424—273 R 6 Claims

1. A method for inhibiting growth hormone activity in a mammal which comprises administering to a mammal in need of said treatment an effective amount of a compound of the formula



wherein

n is 0 or 1,

each R, independently, represents hydrogen or halo of atomic weight about 19–36, or a pharmaceutically acceptable acid addition salt thereof.

4,148,907

STEREOISOMERS OF 1-(1'BENZYL-2'PYRRYL)-2-DI-SEC.-BUTYLAMINOETHANOL AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAME

Franco Conti, Milan, Italy, assignor to Etablissement Viridis, Liechtenstein

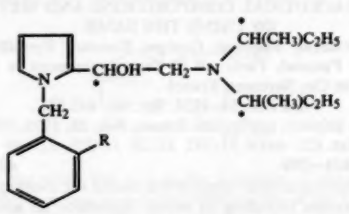
Filed Nov. 18, 1977, Ser. No. 852,685

Claims priority, application Belgium, Nov. 18, 1976, 255466

Int. Cl.[2] A61K *31/40;* C07D *207/44*

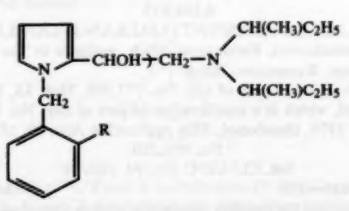
U.S. Cl. 424—274 4 Claims

1. An optically active isomer of the formula:



wherein R is fluoro or tifluoromethyl; and the non-toxic therapeutically acceptable acid addition salts thereof.

4. A therapeutic composition having analgesic activity which comprises as the active ingredient an essentially pure optically active isomer of the formula:



wherein R is fluoro or trifluoromethyl, or a non-toxic thereapeutically acceptable acid addition salt thereof; in combination with a pharmacologically acceptable carrier.

4,148,908

INDOLYL CYANOMETHYLPHENETHANOLAMINES

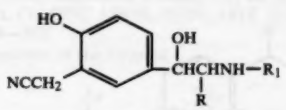
William E. Kreighbaum; William L. Matier, and Herbert R. Roth, all of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 687,435, May 17, 1976, Pat. No. 4,055,658. This application Sep. 22, 1977, Ser. No. 835,764

Int. Cl.[2] A61K *31/395;* C07D *209/18*

U.S. Cl. 424—274 5 Claims

1. A compound selected from the group of phenethanolamines of the formula

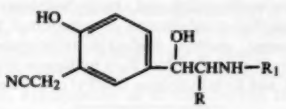


or a pharmaceutically acceptable acid addition salt thereof wherein

R is hydrogen, methyl or ethyl;

R_1 is straight or branched chain lower alkyl of 1 to 6 carbon atoms substituted by 3-indolyl.

5. A method for effecting bronchodilation in a mammal in need of such treatment which comprises the step of administering to said mammal an effective bronchodilator amount of a compound selected from the group of phenethanolamines of the formula



or a pharmaceutically acceptable acid addition salt thereof wherein

R is hydrogen, methyl or ethyl;

R_1 is straight or branched chain lower alkyl of 1 to 6 carbon atoms substituted by 3-indolyl.

4,148,909

CHROMANS TO TREAT DEPRESSION AND REDUCE APPETITE

Derek V. Gardner, Bishops Stortford, England, assignor to Beecham Group Limited, England

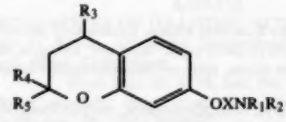
Division of Ser. No. 652,041, Jan. 26, 1976, Pat. No. 4,080,335, which is a continuation-in-part of Ser. No. 599,694, Jul. 28, 1975, abandoned. This application Nov. 9, 1977, Ser. No. 849,972

Claims priority, application United Kingdom, Jul. 30, 1974, 33549/74

Int. Cl.[2] A61K *31/35*

U.S. Cl. 424—283 51 Claims

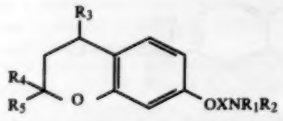
18. A method of reducing depression in humans and animals which comprises administering to a human or animal in need thereof an anti-depressantly effective amount of a compound of the formula



or a pharmaceutically acceptable acid addition salt thereof wherein X is alkylene of 2–4 carbon atoms; R_1 is hydrogen or alkyl of 1–6 carbon atoms; R_2 is hydrogen, alkyl of 1–6 carbon

atoms or benzyl; R_3 is phenyl unsubstituted or substituted by one or two members selected from the group consisting of fluorine, chlorine, bromine, methoxy, benzyloxyl, difluoromethyl, methyl, nitro, acetoxyl, amino, methylamino, dimethylamino, ethylamino, diethylamino, acetamido, hydroxyl, methoxycarbonyl, ethoxycarbonyl, carboxamido, sulphonamido, cyano, carboxy, trifluoromethoxy, trifluoromethylthio, trifluoromethylsulphonyl, methylsulphonyl or methylthio; or naphthyl unsubstituted or substituted by fluorine, chlorine, bromine, methyl, methoxyl, trifluoromethyl, benzyloxyl, hydroxy or methylthio; R_4 is hydrogen or alkyl of 1–4 carbon atoms; and R_5 is hydrogen or alkyl of 1–4 carbon atoms.

35. A method of reducing appetite in humans and animals which comprises administering to a human or animal in need thereof an anorexically effective amount of a compound of the formula



or a pharmaceutically acceptable acid addition salt thereof wherein X is alkylene of 2–4 carbon atoms; R_1 is hydrogen or alkyl of 1–6 carbon atoms; R_2 is hydrogen, alkyl of 1–6 carbon atoms or benzyl; R_3 is phenyl unsubstituted or substituted by one or two members selected from the group consisting of fluorine, chlorine, bromine, methoxy, benzyloxy, difluoromethyl, methyl, nitro, acetoxyl, amino, methylamino, dimethylamino, ethylamino, diethylamino, acetamido, hydroxyl, methoxycarbonyl, ethoxycarbonyl, carboxamido, sulphonamido, cyano, carboxy, trifluoromethoxy, trifluoromethylthio, trifluoromethylsulphonyl, methylsulphonyl or methylthio; or naphthyl unsubstituted or substituted by fluorine, chlorine, bromine, methyl, methoxyl, trifluoromethyl, benzyloxyl, hydroxy or methylthio; R_4 is hydrogen or alkyl of 1–4 carbon atoms; and R_5 is hydrogen or alkyl of 1–4 carbon atoms.

4,148,910
N-METHYL-N-(SULPHONIC ACID AMIDE-N'-SULPHENYL)-CARBAMIC ACID ESTERS

Alfons Hartmann, Beckingen; Engelbert Kühle, Bergisch-Gladbach; Ingeborg Hammann, Cologne; Wolfgang Behrenz, Overath, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

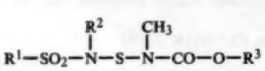
Filed Dec. 30, 1976, Ser. No. 756,049

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1976, 2600981

Int. Cl.[2] A61N *9/16;* **C07D** *307/86*

U.S. Cl. 424—285 **10 Claims**

1. An N-methyl-N-(sulphonic acid amide-N'-sulphenyl)-carbamic acid ester of the formula



in which

R^1 is dialkylamino with 1 to 4 carbon atoms in each alkyl radical, phenyl or phenyl carrying at least one halogen, alkyl with 1 to 4 carbon atoms, nitro or trihalogenomethyl substituent,

R^2 is alkyl with 2 to 8 carbon atoms, cycloalkyl, phenyl or cycloalkyl or phenyl carrying at least one halogen, alkyl with 1 to 4 carbon atoms, nitro or trifluoromethyl substituent, and

R^3 is phenyl, naphthyl, benzodioxolanyl, dihydrobenzofuranyl or indanyl; phenyl, naphthyl, benzodioxolanyl, dihydrobenzofuranyl or indanyl substituted at least once by trihalogenomethyl, halogen, nitro, cyano, cycloalkyl, formamidino, dioxanyl or dioxolanyl, or by alkyl with up to 4 carbon atoms, alkenyl with up to 4 carbon atoms, alkynyl with up to 4 carbon atoms, alkoxy with up to 4 carbon atoms, alkenoxy with up to 4 carbon atoms, alkynoxy with up to 4 carbon atoms, alkylmercapto with up to 4 carbon atoms, alkenylmercapto with up to 4 carbon atoms, alkynylmercapto with up to 4 carbon atoms, or dialkylamino with up to 4 carbon atoms per alkyl moiety.

8. A nematicidal or arthropodicidal composition containing as active ingredient a nematicidally or arthropodically effective amount of an ester according to claim **1** in admixture with a diluent.

4,148,911
METHOD OF TREATING RESPIRATORY DISORDERS

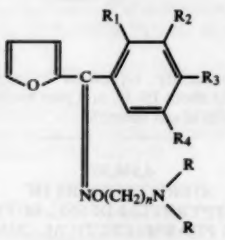
Pierre Bessin, Chilly Mazarin, France, assignor to Societe Anonyme Dite Albert Rolland S.A., Paris, France

Filed Jul. 8, 1977, Ser. No. 814,108

Int. Cl.[2] A61K *27/00, 31/34, 31/40, 31/445*

U.S. Cl. 424—285 **3 Claims**

1. A method of treating respiratory disorders consisting of administering an effective amount of a compound having the formula



wherein R_1, R_2, R_3, R_4 are selected from hydrogen, an atom of halogen, an alkyl group with 1 to 4 carbon atoms and an alkoxy group with 1 to 4 carbon atoms and R is an alkyl group with 1 to 4 carbon atoms, to said man.

4,148,912
PHARMACEUTICAL COMPOSITIONS AND METHODS OF USING THE SAME

Michel Vincent, Bagneux; Georges Remond, Versailles, and Xavier Pascaud, Paris, all of France, assignors to Science Union et Cie, Suresnes, France

Filed Feb. 14, 1974, Ser. No. 442,351

Claims priority, application France, Feb. 28, 1973, 73.06993

Int. Cl.[2] A61K *31/295, 31/29, 31/205, 31/195*

U.S. Cl. 424—295 **43 Claims**

1. A pharmaceutical composition useful for treating gastric hypersecretion including as active ingredient an amount of p-chloro hippuric acid or a physiologically tolerable salt thereof together with an inert non-toxic pharmaceutical carrier for oral or parenteral administration, in unit dosage form containing 0.25 gram to 1 gram per unit dosage.

4,148,913
N-(2-AMINOCYCLOPENTYL)ALKANOYLANILIDES

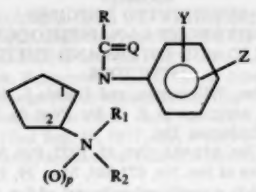
Jacob Szmuskovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 777,599, Mar. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 746,191, Nov. 30, 1976, abandoned. This application Apr. 10, 1978, Ser. No. 895,210

Int. Cl.[2] C07C *103/34, 103/44*

U.S. Cl. 424—300 **36 Claims**

1. A process for treating depression which comprises administering to a depressed human a compound of the formula



(I)

wherein the wavy line (~) in the 1-position of the cyclopentyl ring indicates cis or trans configuration of the substituents in the 1- and 2-positions of the cyclopentyl ring;

p is zero or 1;

Q is oxygen or sulfur;

R is C_1 to C_3-alkyl vinyl, C_3 to C_6-cycloalkyl, ethoxy or methoxymethyl;

R_1 is hydrogen or C_1 to C_3-alkyl;

R_2 is $—CH_2CH_2N(CH_3)_2$ or $—CH_2CH_2CH_2N(CH_3)_2$;

each of Y and Z is selected from the group consisting of hydrogen, a halogen having an atomic number of from 9 to 35, trifluoromethyl, C_1 to C_2-alkyl, and C_1 to C_2-alkyloxy and when Y is trifluoromethyl, Z is hydrogen; when Y is C_1 to C_2-alkyloxy and Z is hydrogen the C_1 to C_2-alkyloxy is in the 3-position; when Y and Z are both halogens or C_1 to C_2-alkyloxy they are present in the 3- and 4- or 3- and 5-positions; or a pharmacologically acceptable salt thereof, in an amount in the range from about 1 to about 100 mg. per dosage unit to alleviate the conditions of depression, in association with a pharmaceutical carrier.

4,148,914
ANALGESIC N-(2-AMINOCYCLO ALIPHATIC)CYANOBENZAMIDES

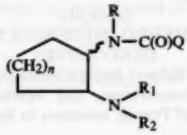
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 741,467, Nov. 12, 1976, Pat. No. 4,098,904. This application May 10, 1978, Ser. No. 904,477

Int. Cl.[2] **A61K** *31/275;* **C07C** *121/78*

U.S. Cl. 424—304 **7 Claims**

1. A compound of the formula

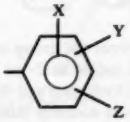


wherein the wavy line (~) at the 1-position of the cycloaliphatic ring denotes trans-stereoconfiguration of the 1-position substituent with respect to the substituent in position 2 of the same cycloaliphatic ring; n is 1 to 8;

R is hydrogen or C_1 to C_3-alkyl;

R_1 and R_2, taken separately, are hydrogen, C_1 to C_3-alkyl, or when R_1 is hydrogen or C_1 to C_3-alkyl, R_2 is C_1 to C_6-alkyl, CH_2CF_3, —C_3 to C_6-(allylic)alkenyl, and

Q is the radical



wherein each of X, Y and Z is hydrogen, or cyano, and at least one of X, Y and Z is a substituent other than hydrogen, and when one of X, Y and Z is cyano, the remaining X, Y and Z moieties are hydrogen, and the pharmaceutically acceptable salts thereof.

5. A method for alleviating pain in a warm blooded animal which comprises administering to the warm blooded animal suffering pain a compound of claim 1.

4,148,915
BIS(2-PHENOXYALKANE CARBOXYLIC ACIDS) AND DERIVATIVES THEREOF AND THEIR USE AS MEDICAMENTS

Germaine Thuillier, Paris; Sylviane S. J. Mignonac, and Pierre A. R. Bessin, both of Chilly-Mazarin, all of France, assignors to Albert Rolland, S.A., Paris, France

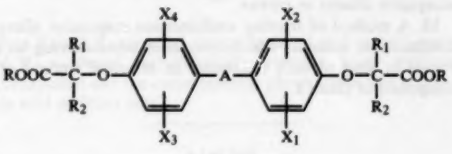
Filed Nov. 8, 1976, Ser. No. 739,963

Claims priority, application France, Nov. 14, 1975, 75 34825

Int. Cl.[2] **C07C** *149/40, 69/84;* **A61K** *31/215*

U.S. Cl. 424—308 **18 Claims**

1. A compound of the formula



wherein

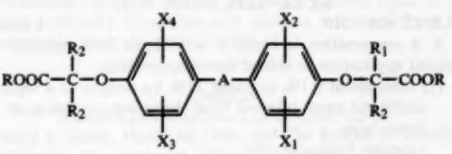
R is hydrogen or alkyl of 1 to 5 carbon atoms,

R_1 is hydrogen or alkyl of 1 to 3 carbon atoms,

R_2 is alkyl of 4 to 12 carbon atoms,

A is O, S, SO or SO_2; and each of X_1, X_2, X_3 and X_4 is independently hydrogen, halogen or alkyl of 1 to 3 carbon atoms or a pharmaceutically acceptable salt thereof.

9. A pharmaceutical composition in dosage unit form for treatment of an animal against hypercholoesterolemia, hypertiglyceridemia, hyperlipemia or arteriosclorosis comprising an amount effective to combat said hypercholoesterolemia, hypertiglyceridemia, hyperlipemia or arterioschlorosis of a compound of the formula



wherein

R is hydrogen or alkyl of 1 to 5 carbon atoms,

R_1 is hydrogen or alkyl of 1 to 3 carbon atoms,

R_2 is hydrogen or alkyl of 1 to 12 carbon atoms,

A is selected from the group consisting of O, S, SO, and SO_2, and

X_1, X_2, X_3 and X_4 are each independently selected from the group consisting of hydrogen, halogen, and alkyl of 1 to 3 carbon atoms, or a pharmaceutically acceptable salt thereof, and a pharmaceutical carrier therefor.

4,148,916
DERIVATIVES OF OXAMINIC ACIDS AND ESTERS

Trevor G. Payne, Arlesheim, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

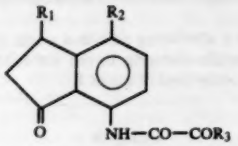
Filed Jun. 22, 1978, Ser. No. 917,949

Claims priority, application Switzerland, Jun. 28, 1977, 7913/77; Jun. 28, 1977, 7914/77

Int. Cl.[2] **A61K** *31/24;* **C07C** *101/44*

U.S. Cl. 424—309 **12 Claims**

1. A compound of formula



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wherein

R_1 is hydrogen or alkyl of 1 to 10 carbon atoms,

R_2 is chlorine or alkoxy of 1 to 4 carbon atoms, or

R_1 and R_2 together are $-(CH_2)_m-$, wherein m is 3 or 4, and R_3 is OH or alkoxy of 1 to 4 carbon atoms, and, in the case of compounds wherein R_3 is OH, in free form or in pharmaceutically acceptable salt form.

11. A pharmaceutical composition comprising an antihistamine responsive amount of a compound of claim **1** to relieve allergic conditions, in association with a pharmaceutically acceptable diluent or carrier.

12. A method of treating antihistamine responsive allergic conditions in animals, which comprises administering to an animal in need of such treatment, an effective amount of a compound of claim **1**.

4,148,917

DERMATOLOGICAL COMPOSITIONS

Donald E. Smith, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 805,668, Jun. 13, 1977, which is a division of Ser. No. 647,943, Jan. 12, 1976, Pat. No. 4,046,886, which is a division of Ser. No. 541,902, Jan. 17, 1975, Pat. No. 3,952,099, which is a division of Ser. No. 340,787, Mar. 13, 1973, Pat. No. 3,896,238, which is a continuation-in-part of Ser. No. 241,404, Apr. 5, 1972, abandoned. This application May 30, 1978, Ser. No. 910,268

Int. Cl.[2] **A61K** *31/245, 31/10*

U.S. Cl. 424—310 **1 Claim**

1. A composition in liquid or semi-liquid form adopted to topical application to animal tissue comprising:

(1) from about 0.1% to about 15% by weight of a topical anesthetic agent selected from the group consisting of
benzocaine,
procaine hydrochloride,
nupercaine, and
pontocaine;

(2) from about 0.1% to about 1.0 by weight of a sugar ester selected from the group consisting of
sucrose monooctanoate,
sucrose monodecanoate,
sucrose monolaurate,
sucrose myristate,
sucrose monopalmitate,
sucrose monostearate,
sucrose monooleate, and
sucrose dioleate; and

(3) from about 0.1% to about 10% by weight of a sulfoxide compound selected from the group consisting of
octyl methyl sulfoxide,
nonyl methyl sulfoxide,
decyl methyl sulfoxide,
undecyl methyl sulfoxide,
dodecyl methyl sulfoxide,
2-hydroxydecyl methyl sulfoxide,
2-hydroxyundecyl methyl sulfoxide,
2-hydroxydodecyl methyl sulfoxide.

4,148,918

SUBSTITUTED 2-HIGHER ALKYL-3-HYDROXY-1,4-NAPHTHOQUINONE CARBOXYLIC ACID ESTERS AND THEIR USE AS MITICIDES

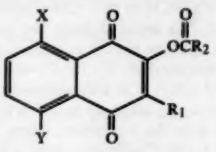
Russell F. Bellina, Wilmington, and Dennis L. Fost, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 841,453, Oct. 12, 1977, Pat. No. 4,115,584, which is a division of Ser. No. 671,044, Mar. 29, 1976, Pat. No. 4,070,481, which is a continuation-in-part of Ser. No. 613,553, Sep. 15, 1975, Pat. No. 4,055,661, which is a continuation-in-part of Ser. No. 531,483, Dec. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 494,294, Aug. 2, 1974, abandoned, Continuation of Ser. No. 468,692, May 10, 1974, abandoned. This application Jul. 31, 1978, Ser. No. 929,802

Int. Cl.[2] **A01N** *9/00, 9/24;* **C07C** *69/96*

U.S. Cl. 424—314 **21 Claims**

1. A compound of the formula:



wherein

R_1 is alkyl of 8–14 carbon atoms which are branched, cyclic or straight chain;

R_2 is alkenyl of 2–17 carbon atoms;

X is hydrogen, fluorine, chlorine, bromine, methyl or methoxy; and

Y is hydrogen, fluorine, chlorine, bromine, methyl or methoxy;

provided that at least one of X and Y is other than hydrogen.

8. A method for protecting plants from mites or aphids which comprises applying to the plant a miticidally or aphicidally effective amount of a compound of claim **1**.

4,148,919

7-AMINO-6,7-DIHYDRO [5H]BENZOCYCLOHEPTENE DERIVATIVES

Lucien Nedelec, Le Raincy; André Pierdet, Noisy-le-Sec; Claude Dumont, Nogent-sur-Marne, and Marie-Hélène Kanneng-iesser, Paris, all of France, assignors to Roussel Uclaf, Paris, France

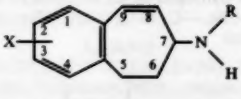
Filed Jul. 26, 1976, Ser. No. 708,750

Claims priority, application France, Jul. 28, 1975, 75 23500

Int. Cl.[2] **A01N** *9/20, 9/24;* **C07C** *87/28*

U.S. Cl. 424—33 D **5 Claims**

1. A compound selected from the group consisting of 7-amino-6,7-dihydro[5H]benzocycloheptenes of the formula



wherein X is selected from the group consisting of hydrogen, chlorine, bromine and iodine in 2- or 4-position of the ring when halogen and R is hydrogen and their non-toxic, pharmaceutically acceptable acid addition salts.

4. A method of treating depressed states and psychoses in warm-blooded animals comprising administering to warm-blooded animals an antidepressantly effective amount of a least one active compound of claim **1**.

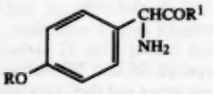
4,148,920

THERAPEUTIC L- AND DL- PHENYLGLYCINES TO TREAT DISEASES OR DISORDERS OF REDUCED BLOOD FLOW OR OXYGEN AVAILABILITY

Ian T. Barnish, Ramsgate; Peter E. Cross; John C. Danilewicz, both of Canterbury, and Malcolm Morville, Cliftonville, all of England, assignors to Pfizer Inc., New York, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,768
Claims priority, application United Kingdom, Sep. 28, 1976, 40306/76
Int. Cl.[2] A61K *31/24, 31/165, 31/195*
U.S. Cl. 424—319 7 Claims

1. A method of treating a mammalian subject suffering from a disease or condition attributable to reduced blood flow or oxygen availability, which comprises orally or parenterally administering to said subject a blood flow or oxygen availability increasing amount of the L- or DL- form of a compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein R is hydrogen or methyl and R^1 is OH.

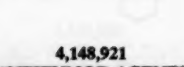
4,148,921

ANTITUMOR AGENTS

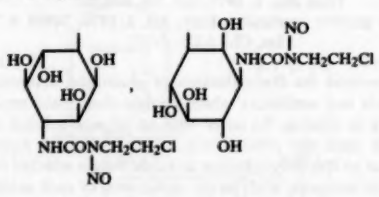
Tetsuo Suami, 3-5-8 Nakamachi, Musashimo, Tokyo 180, Japan

Filed Jul. 13, 1977, Ser. No. 815,119
Int. Cl.[2] A61K *31/17, 31/175;* C07C *127/15, 133/06*
U.S. Cl. 424—322 6 Claims

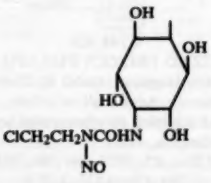
5. A pharmaceutical composition comprising an effective tumor-inhibiting amount of a compound of the formula



wherein R represents



or



in combination with an inert pharmaceutically acceptable carrier or diluent.

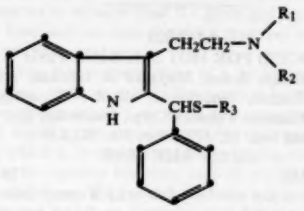
4,148,922

3-[2-(DIALKYLAMINO)ETHYL]-2-(BENZYL)INDOLES

Harold Zinnes, Rockaway, and Martin L. Schwartz, Parsippany, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 4, 1978, Ser. No. 902,582
Int. Cl.[2] C07D *209/16, 209/18;* A61K *31/40*
U.S. Cl. 260—326.12 R 5 Claims

1. A compound of the formula



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where R_1 and R_2 are alkyl groups having 1 to 4 carbon atoms and R_3 is phenyl, carboloweralkoxymethyl, lower alkyl or hydroxyethyl and the corresponding pharmaceutically acceptable acid addition salts.

4,148,923

1-(3'-TRIFLUOROMETHYLTHIOPHENYL)-2-ETHYLAMINOPROPANE PHARMACEUTICAL COMPOSITION AND METHOD FOR TREATING OBESITY

Don P. R. L. Giudicelli, Fontenay-Sous-Bois, and Henry Najer, Paris, both of France, assignors to Synthelabo, Paris, France

Division of Ser. No. 473,231, May 24, 1974, abandoned, which is a continuation-in-part of Ser. No. 365,181, May 30, 1973, Pat. No. 3,965,190. This application Jan. 16, 1978, Ser. No. 869,709
Claims priority, application France, May 31, 1972, 72 19515
Int. Cl.[2] A61K *31/135*
U.S. Cl. 424—330 4 Claims

1. A pharmaceutical composition comprising an anorexigenic effective amount of 1-(3'-trifluoromethylthiophenyl)-2-ethylaminopropane in racemic or optically active form, or a pharmaceutically acceptable acid addition salt thereof and a compatable, pharmaceutical carrier.

4,148,924

DERMATOLOGICAL COMPOSITIONS

Donald E. Smith, Hamilton, Ohio, and The Procter & Gamble Company, 02, Cincinnati, Ohio

Division of Ser. No. 805,668, Jun. 13, 1977, which is a division of Ser. No. 647,943, Jan. 12, 1976, Pat. No. 4,046,886, which is a division of Ser. No. 541,902, Jan. 17, 1975, Pat. No. 3,952,099, which is a division of Ser. No. 340,787, Mar. 13, 1973, Pat. No. 3,896,238, which is a continuation-in-part of Ser. No. 241,404, Apr. 5, 1972, abandoned. This application May 30, 1978, Ser. No. 910,270
Int. Cl.[2] A61K *31/07, 31/10, 47/00*
U.S. Cl. 424—344 1 Claim

1. A composition in liquid or semi-liquid form adopted to topical application to animal tissue comprising:

(1) from about 0.1% to about 10% by weight of vitamin A; and

(2) from about 0.1% to about 1.0 by weight of a sugar ester selected from the group consisting of
sucrose monooctanoate,
sucrose monodecanoate,
sucrose monolaurate,
sucrose myristate,
sucrose monopalmitate,
sucrose monostearate,
sucrose monooleate, and
sucrose dioleate; and

(3) from about 0.1% to about 10.0% by weight of a sulfoxide compound selected from the group consisting of
octyl methyl sulfoxide,
nonyl methyl sulfoxide,
decyl methyl sulfoxide,
undecyl methyl sulfoxide,
dodecyl methyl sulfoxide,
2-hydroxydecyl methyl sulfoxide,
2-hydroxyundecyl methyl sulfoxide,
2-hydroxydodecyl methyl sulfoxide.

4,148,925

PROCESS FOR HOT SMOKING FISH

F. Edward Pettinato, Bronx; Maynard A. Herman, Amawalk, and Steven Koczak, Woodhaven, all of N.Y., assignors to Brown & Williamson Tobacco Corp., Louisville, Ky.

Filed Sep. 12, 1977, Ser. No. 832,610
Int. Cl.[2] A22C *25/00*
U.S. Cl. 426—235 **11 Claims**

1. A method of hot smoking fish, which comprises:
a. providing said fish in a condition ready for hot smoking;
b. drying the fish skin surface under non-cooking conditions;
c. cooking the fish by subjecting said fish to ambient temperatures and humidities according to the following sequence:
1. at a temperature of up to about 110° F. until the temperature at the center of the fish is within the range of from about 85° F. to 105° F.;
2. at a temperature of from about 110° F. to about 130° F. until the temperature at the center of the fish is within the range of from about 100° F. to 125° F.;
3. at a temperature of from about 130° F. to about 150° F. at a relative humidity of from about 14 to 50 percent until the temperature at the center of the fish body reaches a temperature of from about 125° F. to about 145° F.;
4. at a temperature of from about 150° F. to 170° F. and at a relative humidity of from about 23 percent to 50 percent until the temperature at the center of the fish body reaches a temperature of from about 145° F. to about 165° F.;
5. at a temperature of from about 170° F. to 200° F. and at a relative humidity of from about 7 percent to 40 percent until the temperature at the center of the fish body reaches a temperature of from about 160° F. to about 180° F.;
d. smoking the fish at a time within the cooking period until the desired color is achieved; and
e. cooling the cooked fish to room temperatures.

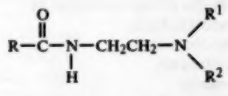
4,148,926

DIALKYL AMINO ETHYL AMIDES AS ANTI-RIPENING AGENTS

Don R. Baker, Orinda, and Daniel L. Hyzak, Saratoga, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 4, 1977, Ser. No. 839,482
Int. Cl.[2] A23L *3/34*; C07C *103/44, 103/82*; C07D *307/68*
U.S. Cl. 426—333 **3 Claims**

1. A method for retarding the ripening of picked fruits, vegetables and other merchantable materials of plant origin comprising contacting said fruits, vegetables and other merchantable material of plant origin with an amount effective to retard ripening of a compound having the structural formula



in which R is alkyl having 1 to 12 carbon atoms, phenoxymethyl, furanyl, norbornenyl, phenethyl, hydroxy alkyl having 1 to 4 carbon atoms and R^1 and R^2 are independently alkyl having 1 to 4 carbon atoms and their salts wherein the anion is chloride, bromide, acetate, sulfate or phosphate.

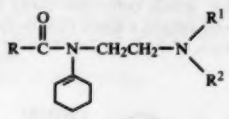
4,148,927

DIALKYL AMINO ETHYL AMIDES, THEIR SALTS AND THEIR USE AS ANTI-RIPENING AGENTS

Don R. Baker, Orinda, and Daniel L. Hyzak, Saratoga, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

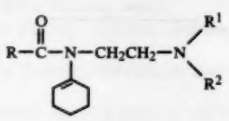
Filed Oct. 4, 1977, Ser. No. 839,470
Int. Cl.[2] A23L *3/34*; C07C *103/44, 103/82*; C07D *307/68*
U.S. Cl. 426—333 **8 Claims**

1. Compounds having the structural formula



in which R is alkyl having 1 to 12 carbon atoms, furanyl, phenyl and isopropenyl, R^1 and R^2 are independently alkyl having 1 to 4 carbon atoms and their salts wherein the anion is chloride, bromide, acetate, sulfate or phosphate.

5. A method for retarding the ripening of picked fruits, vegetables and other merchantable materials of plant origin comprising contacting said fruits, vegetables and other merchantable material of plant origin with an amount effective to retard ripening of a compound having the structural formula



in which R is alkyl having 1 to 12 carbon atoms, furanyl, phenyl, and isopropenyl, R^1 and R^2 are independently alkyl having 1 to 4 carbon atoms and their salts wherein the anion is chloride, bromide, acetate, sulfate or phosphate.

4,148,928

METHOD FOR THE EXTRACTION OF UNDESIRABLE AND/OR TOXIC GLUCOSIDIC COMPOUND FROM VEGETABLES

Giancarlo Sodini; Marco Canella, both of Rome, and Alberto Patricelli, Mentana, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Jun. 1, 1977, Ser. No. 802,567
Claims priority, application Italy, Jul. 2, 1976, 24985 A/76
Int. Cl.[2] A23L *1/20*
U.S. Cl. 426—430 **5 Claims**

1. A method for the extraction of glucosidic compounds from seeds and seedflours which contain them, said process consisting in treating the latter with an organic solvent containing at least one polar group together with an aqueous solution of an electrolyte having an acidic nature selected from organic or inorganic acids or the acidic salts of such acids.

4,148,929

STABILIZED FROZEN POTATO SALAD

Harold Gorfien, Framingham; Abdul R. Rahman, Natick, and Donald E. Westcott, Acton, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 27, 1977, Ser. No. 864,892
Int. Cl.[2] A23L *1/216*
U.S. Cl. 426—576 **5 Claims**

1. Process for producing frozen potato salad comprising

subdivided, cooked potatoes, an oil emulsion type food dressing selected from the group consisting of mayonnaise and salad dressing, and modifying ingredients, said frozen potato salad being stabilized against the separation of oil therein, which comprises the steps of adding to said food dressing and thorough mixing therewith an aqueous solution of gelatin and synthetic dry vinegar prior to mixing of said food dressing with said subdivided, cooked potatoes and said modifying ingredients, mixing said food dressing containing said aqueous solution of gelatin and synthetic dry vinegar with said subdivided, cooked potatoes and said modifiying ingredients to form a stabilized potato salad, and freezing said stabilized potato salad to produce said frozen potato salad.

4,148,930
MARGARINE

Hendrik J. Duin; Antonius F. van Dam, and Johannes H. M. Rek, all of Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Sep. 22, 1977, Ser. No. 835,624

Claims priority, application United Kingdom, Sep. 24, 1976, 39815/76

Int. Cl.[2] A23D *3/00*

U.S. Cl. 426—603 **8 Claims**

1. An improved margarine of the type comprising a water-in-oil emulsion, the improvement comprising: having in the aqueous phase of said emulsion a protein material, wherein,

(a) said protein material is a dairy protein and has a weight ratio of proteose peptone protein to pH 4 to 6 isoelectric point proteinaceous material of at least 0.5; and

(b) said protein material is present at a level to provide at least 0.005 percent by weight of said margarine of proteose peptone protein, the improvement thereby providing for reduced spattering characteristics when said margarine is used for frying.

4,148,931
PROCESS FOR DEPOSITING ELEMENTAL SILICON SEMICONDUCTOR MATERIAL FROM A GAS PHASE

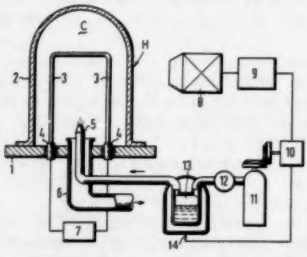
Konrad Reuschel, Vaterstetten; Wolfgang Dietze, and Ulrich Rucha, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Division of Ser. No. 774,636, Mar. 4, 1977, Pat. No. 4,125,643. This application Apr. 28, 1978, Ser. No. 900,896

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1976, 2609564

Int. Cl.[2] C23C *11/06*; C01B *33/02*

U.S. Cl. 427—8 **4 Claims**



1. In a process for depositing elemental silicon from a reactive gas comprised of a mixture of a halogen silane and hydrogen whereby the reactive gas flows through a reaction housing containing a heated mandrel on which silicon is deposited from such gas and wherein the deposition rate of silicon onto the mandrel surface varies during a course of the deposition process, the improvement comprising:

chronologically maintaining a relatively constant temperature at the mandrel surface and maintaining a relatively constant composition within the reactive gas;

varying the reactive gas through-put past the mandrel in such a manner that the deposition rate of silicon onto the mandrel surface remains substantially constant throughout the deposition process, said deposition rate being selected at the beginning of the deposition process in relation to the surface unit area of the mandrel and in relation to a unit time, so that the deposition rate of silicon per unit area of mandrel surface and per unit time is maintained so as to be at least 0.1 gram per square centimeter per hour and less than about 0.5 gram per square centimeter per hour; and

monitoring the concentration of a hydrogen halide in an exhaust gas flowing from the reaction housing and generating a signal based on such concentration and feeding said signal to a control means for the supply of reactive gas which is in communication with the reaction housing so as to regulate the flow rate of reaction gas past the mandrel in such a manner that the concentration of said hydrogen halide in the exhaust gas remains chronologically substantially constant.

4,148,932
ATOMIZATION IN ELECTROSTATIC COATING

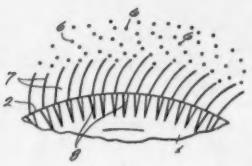
Yoshinori Tada, Chigasaki, and Michio Mitsui, Kawasaki, both of Japan, assignors to Ransburg Japan, Ltd., Tokyo, Japan

Filed Jan. 25, 1978, Ser. No. 872,066

Claims priority, application Japan, Feb. 7, 1977, 52/12286; May 31, 1977, 52/63872

Int. Cl.[2] B05D *1/06*

U.S. Cl. 427—31 **4 Claims**



1. A method of atomizing a liquid paint using a rotating atomizing device and electrostatically coating an article with a smooth homogeneous film of liquid paint, wherein an electrostatic field is established between the peripheral edge of the rotating atomizing device and the article to be coated and the liquid paint flows toward the edge of the atomizing device as a continuous thin film, characterized in substantially reducing the thickness of the paint film as it reaches the peripheral edge by flowing the film over a series of circumferentially spaced recessed grooves which run substantially in the direction of paint flow and terminate at the discharge edge, where said grooves extend into the peripheral edge of the device, and atomizing the liquid paint film as it is projected beyond the peripheral edge.

4,148,933
PRESERVING FOOD PRODUCTS

Viacheslav J. Janovtchik, London, England, assignor to In. Da. Te. Aktiengesellschaft, Eschen, Liechtenstein

Filed Aug. 30, 1977, Ser. No. 829,104

Claims priority, application United Kingdom, Aug. 31, 1976, 35988/76

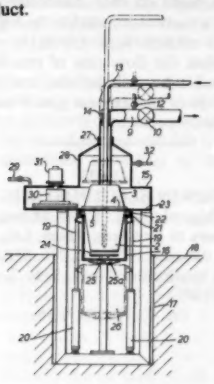
Int. Cl.[2] A23B *7/00*; A23L *2/16*; A23P *1/00*

U.S. Cl. 426—402 **7 Claims**

1. A method of preserving a food product comprising the steps of:

placing a body of food product in a container in which it is ultimately sealed;

placing the container in a sealed chamber;
capping the container with a cover;
admitting steam into the sealed chamber to create and maintain sterile conditions therein;
lowering an injector tube through the cover into the product in the container;
feeding a hot fluid through the tube into the product to sterilize the product;
cooling the product in the container;
retaining a predetermined amount of liquid in admixture with the sterile product in the container;
withdrawing the injector tube and the cover;
sealing the container while it is within the aseptic environment in the chamber; and then
opening the chamber to remove the sealed container of sterile product.



3. A method of preserving a food product comprising the steps of:
inserting into a retracted lower part of a sealable enclosure, a sealable container containing a body of a food product, which lower part substantially encloses and supports said container;
sealing the enclosure by raising said lower part into sealing engagement with the apertured floor of a fixed upper part of said enclosure;
admitting steam into the sealed enclosure to create and maintain aseptic conditions therein;
sterilizing the body of food product in the container with a fluid;
sealing the container within the aspetic environment within the sealed enclosure; and then
unsealing the enclosure by lowering said lower part of said enclosure and the sealed container therein.

4,148,934

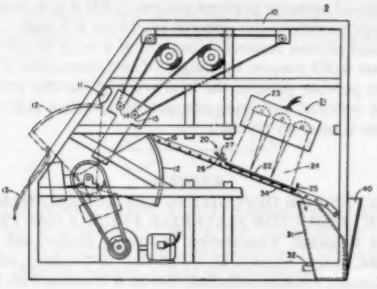
SECONDARY PHOTOCURING OF PHOTOCURED PRINTING PLATE, APPARATUS AND METHOD

Noel J. Baker, Herts, England, assignor to W. R. Grace Ltd., London, England

Filed Dec. 2, 1977, Ser. No. 856,944
Int. Cl.[2] B25D *3/06*
U.S. Cl. 427—54 **4 Claims**

1. A method for secondary curing of a printing plate having a printing face that has been selectively photocured producing areas of cured solidified polymer and areas of uncured liquid composition said method comprising
(a) mechanically stripping said printing face removing at least substantially all of the areas of uncured liquid composition thereby leaving an exposed stripped surface, said mechanical stripping including the operation of a stationery air knife and conveying said printing plate past said air knife during at least a portion of said mechanical stripping;
(b) conveying said printing plate from the location of said mechanical stripping to another location, inclining said printing plate in a sloping position at a gradual angle and stopping said printing plate in said sloped position by a gate means and holding it so disposed;
(c) covering said stripped surface with water that is heated to above ambient temperature by depositing said water in closely spaced streams linearly across a weir plate and merging the streams on the weir plate to form a thin sheet of water and cascading said water over said stripped surface while said printing plate is in said sloping position and substantially sealing out the oxygen in the air;
(d) exposing said stripped surface to actinic light through said water;
(e) removing said water from said stripped surface by stopping said cascading;
(f) continuing to hold said printing plate in said sloped position by said gate;
(g) continuing to expose said stripped surface to actinic light;
(h) opening said gate and releasing said printing plate from said sloped position; and
(i) recirculating said water for secondary curing of subsequent printing plates.

2. Apparatus for secondary curing of a printing plate having a printing face that has been selectively photocured producing



areas of cured solidified polymer and areas of uncured liquid composition, said apparatus comprising
(a) stripping means for mechanically stripping said printing face removing at least substantially all of the areas of uncured liquid composition thereby leaving an exposed stripped surface, said stripping means including an air knife capable of stripping the bulk of said uncured liquid composition from said selectively photocured printing plate;
(b) a covering means having a weir plate and a drilled pipe extending linearly acros said weir plate for depositing streams of inert liquid on the weir plate to form a thin sheet of said inert liquid and supplying it to cover said stripped surface thereby substantially seal out the oxygen in the air, said covering means spaced from said stripping means and connected thereto by a conveyor having a sloped portion at said covering means;
(c) a gate associated with said sloped portion of said conveyor for retaining said printing plate stationary on said sloped portion of said conveyor during said covering;
(d) a reservoir adjacent said gate for receiving said inert liquid;
(e) a pump connected to said reservoir and said drilled pipe for delivering said inert liquid from said reservoir to said drilled pipe; and
(f) an actinic liquid source positioned to impinge actinic light on said stripped surface while it is covered with said inert liquid.

4,148,935

METHOD OF MAKING FLUORESCENT LAMP

Willy P. Schreurs, Danvers, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Nov. 30, 1977, Ser. No. 855,829
Int. Cl.[2] B05D *1/36, 5/06, 7/22*
U.S. Cl. 427—67 5 Claims

1. In the manufacture of a fluorescent lamp, the steps which comprise: depositing on the inner bulb wall of a fluorescent lamp a first particulate coating from a suspension the liquid vehicle of which comprises polyoxyethylene, hydroxyethylmethyl cellulose and an insolubilizing agent all dissolved in water; drying the coating and then heating it at a low temperature sufficient to insolubilize the coating but insufficient to burn out the organic matter therefrom; depositing on the first particulate coating a second particulate coating from a suspension the liquid vehicle of which comprises polyoxyethylene and hydroxyethylmethyl cellulose dissolved in water; drying the coating; lehring the bulb; and processing the bulb into a finished fluorescent lamp.

4,148,936

METHOD FOR DIFFUSION COATING AN FE-NI BASE ALLOY WITH CHROMIUM

John J. Grisik, Middletown, and David J. Wortman, West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 753,949, Dec. 23, 1976. This application Nov. 21, 1977, Ser. No. 853,799
Int. Cl.[2] C23C *11/04, 9/02*
U.S. Cl. 427—253 1 Claim

1. A method for making an article consisting essentially of an Fe—Ni base alloy of the controlled linear thermal expansion type characterized by the substantial absence of Cr, having an inflection in its mean coefficient of linear thermal expansion in its curie temperature range, and having a mean coefficient of linear thermal expansion of less than about 4.7 inches X 10^{-6} per inch per °F. at the inflection temperature, the alloy consisting essentially of, by weight, 30–40% Ni, 10–20% Co, 1–5% of the sum of Cb and Ta, 0.5–3% Ti, 0.2–3% Al, up to about 3% Hf, up to about 3% Zr, up to about 0.5% B, with the balance Fe and incidental impurities, a surface of the alloy having diffused therein a coating of a material selected from the group consisting of Cr and alloys of Cr and Ni, comprising the steps of:

providing a powder mixture, by weight of 15–25% Cr powder, 1.5–2.5% of a chloride salt activator, with the balance alumina powder;

placing the article and the powder mixture in a container with a non-oxidizing atmosphere; and then,

heating the article and the mixture at a temperature in the range of about 1450–1650° F. for a time sufficient for Cr to deposit on and diffuse into the surface.

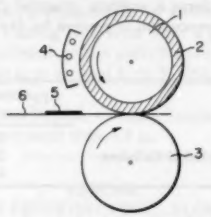
4,148,937

PROCESS FOR FIXING A TONER IMAGE

Hisashi Kurachi; Yoshihiro Sakamoto, both of Tokyo; Kaichi Tsuchiya, Fuchu; Hiroshi Yamakami, Tokyo; Tatsuo Miyamae, and Seizi Tomari, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 547,353, Feb. 5, 1975, abandoned. This application Jan. 12, 1977, Ser. No. 758,779
Claims priority, application Japan, Feb. 15, 1974, 49-18826
Int. Cl.[2] G03G *13/20, 9/10*
U.S. Cl. 427—194 12 Claims

1. In a process for fixing a toner image formed on a support comprising contacting the toner image with a heated roller and heating the toner image to a temperature not lower than the fixing point of the toner image but not higher than the offset point of the toner image at which point the toner image adheres to the surface of the heated roller, wherein the toner comprises a pigment dispersed in a solid resin binder and is obtained by mixing and dispersing said pigment in said solid dry resin binder, the improvement comprising said binder consisting essentially of more than 15 percent by weight based on the total weight of the binder, of a styrene-butadiene co-



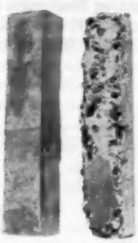
polymer containing from 70 to 95 mole percent of styrene, wherein the difference between the fixing point and the offset point for said toner image is at least 60° C.

4,148,938

PROTECTING PAVEMENT MATERIALS AGAINST THE EFFECTS OF FREEZING AND THAWING OF WATER OR BRINE SOLUTIONS

Charles N. Hansen, 1448 S. 17th East, Salt Lake City, Utah 84108

Continuation-in-part of Ser. No. 544,589, Jan. 27, 1975, abandoned, which is a continuation of Ser. No. 397,495, Sep. 14, 1973, abandoned. This application Mar. 31, 1977, Ser. No. 783,113
Int. Cl.[2] B05C *1/16;* C09K *3/18*
U.S. Cl. 427—136 23 Claims



1. A spalling reducing composition for application to the surface of cured concrete and bituminous concrete while such surface is subject to the accumulation of water, snow or ice under ambient temperature conditions which are conducive to freezing water absorbed into the porous concrete and bituminous concrete comprising, soluble sodium carboxy methyl cellulose and a protecting agent, said protecting agent having the capacity of reacting with calcium ions in a solution containing such ions so as to aid in maintaining said sodium carboxy methyl cellulose in a soluble state when in the presence of calcium ions, said sodium carboxy methyl cellulose and said protecting agent being present in a range of ratios by weight from approximately 20 parts sodium carboxy methyl cellulose to 1 part protecting agent and from 1 part sodium carboxy methyl cellulose to 7 parts protecting agent.

11. The method of protecting concrete and bituminous concrete which are subject to accumulations of water, snow, and ice from spalling caused by the freezing and thawing of liquids which have been absorbed within the concrete and bituminous concrete comprising, the steps of:

A. dissolving a protecting agent in water to form a saturated solution, said protecting agent having the capability of reacting with calcium ions in a solution containing such ions,

B. mixing said protecting agent solution with a de-icing agent selected from the group consisting of urea, sodium

chloride, or a combination of urea and sodium chloride to uniformly coat the surface of the de-icing agent to form a mixture,

C. blending sodium carboxy methyl cellulose with said mixture to form a uniform granular free flowing blend having a composition in percent by dry weight within the ranges of:

	Approximate % dry weight of composition (±.1%)
Protecting agent	32.0 to .5
Sodium Carboxy Methyl Cellulose	26.6 to .5
De-icing agent	41.4 to 99.0

D. spreading said uniform blend onto the concrete or bituminous concrete surface so as to be present when water, snow, or ice contacts such surface and ambient temperatures are sufficiently low to cause water to freeze.

4,148,939

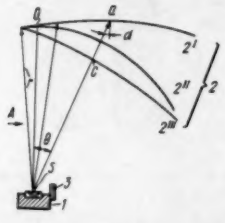
METHOD OF MANUFACTURING A TRANSPARENT BODY HAVING A PREDETERMINED OPACITY GRADIENT

Alexandr V. Korjukin, Chernomorsky bulvar, 4, kv. 249; Galina S. Vesnitskaya, Pervomaiskaya ulitsa, 109/2, kv. 14; Elena M. Gerasimova, Izmailovksy prospekt, 119, kv. 2; Matvei M. Gudimov, ploschad Vosstaniya, 1, kv. 419; Emma F. Markina, ulitsa B. Zhigulenkova, 1/20, kv. 19, all of Moscow; Alexandr A. Klitsov, ulitsa Karantinnaya, 86; Alexandr T. Kovtun, Krasnogvardeisky pereulok, 13, kv. 5, both of Taganrog Rostovskoi oblasti; Georgy M. Beriev, Simferopolsky bulvar, 27, kv. 36, Moscow, and Viktor L. Vasilchenko, ulitsa Prokhladnaya, 3, kv. 17, Taganrog Rostovskoi oblasti, all of U.S.S.R.

Filed Aug. 19, 1974, Ser. No. 498,614

Int. Cl.[2] B05D *5/06*

U.S. Cl. 427—164 **9 Claims**



1. In a method of manufacturing a transparent body which has at least in part an optical density which gradually changes in degree in a given direction, the steps of evaporating in an evacuated atmosphere upwardly from an evaporator a light filtering substance of a type which when deposited on a surface of a transparent body forms thereon a coating which will increase the optical density of the body as the thickness of the deposited coating increases, simultaneously positioning in said evacuated atmosphere over said evaporator a transparent body which has a surface directed toward said evaporator to receive the evaporated light filtering substance which deposits itself on said surface, to form said coating thereon, maintaining the body stationary during deposition of said substance on said surface thereof, and providing between said surface of said body and said evaporator a relationship which is predetermined in accordance with two factors, namely the factor of the distance between points of said surface and said evaporator and the factor of the angle of evaporation of the evaporator with respect to said points, while also arranging said points along a path providing a gradual change in at least one of said factors relative to the other of said factors from one point to the next along said path with said change producing a gradual variation in the thickness of the deposited coating along said path, whereby the transparent body will be provided with an optical density which gradually changes in degree.

4,148,940

METHOD FOR DEPOSITING FILMS CONTAINING COBALT OXIDE

J. Shannon Breininger, Gibsonia, and Charles B. Greenberg, Murraysville, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 20, 1978, Ser. No. 890,562

Int. Cl.[2] B05D *1/02, 5/12*

U.S. Cl. 427—226 **10 Claims**

1. In a method for depositing metal oxide coatings which comprise cobalt oxide by thermal decomposition of a coating composition comprising an organometallic coating reactant and an organic solvent, the improvement which comprises:

a. dehydrating cobaltous acetylacetonate; and

b. dissolving the dehydrated cobaltous acetylacetonate in said organic solvent.

4,148,941

PROCESS FOR DUST REDUCTION TREATMENT OF EXPANDED PERLITE

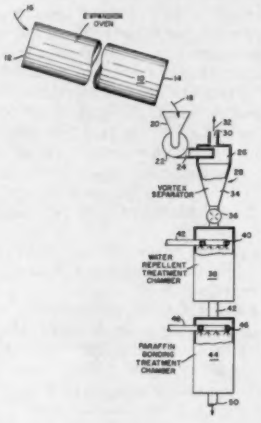
Hans Pape, Dortmund, and Joseph Siebel, Bochum, both of Fed. Rep. of Germany, assignors to Ekoperl GmbH, Dortmund, Fed. Rep. of Germany

Filed Feb. 13, 1978, Ser. No. 877,272

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739375

Int. Cl.[2] C04B *31/26*; B65B *1/18*

U.S. Cl. 427—214 **11 Claims**



7. A process for bonding the dust particles of dry perlite which has been expanded in an expansion oven at about 1100° C. comprising:

(a) removing the expanded perlite from said expansion oven;

(b) passing said expanded perlite through a vortex separator;

(c) discharging at least part of the expanded perlite particles having a diameter of less than 0.2 mm from said vortex separator;

(d) cooling the remainder of said expanded perlite to a temperature greater than 250° C.;

(e) passing the expanded perlite in a loose free flowing stream at a temperature greater than 250° C. past a first spray head;

(f) spraying a finely atomized liquid water repellent at a temperature greater than 250° C. from said first spray head upon said expanded perlite flowing therepast; then

(g) further cooling the expanded perlite to a temperature of less than 130° C.;

(h) passing the expanded perlite at less than 130° C. in a loose free flowing stream past a second spray head;
(i) spraying a finely atomized paraffin hydrocarbon at a temperature of less than 130° C. from said second spray head upon said expanded perlite flowing therepast;
(j) said paraffin hydrocarbon having a viscosity of from about 4 to about 8 centistokes measured at 20° C.; and
(k) said paraffin hydrocarbon being sprayed in the proportion of from about 2 to about 10 kilogrammes per cubic meter of expanded perlite.

4,148,942

REMOVAL OF EXCESS MOLTEN ALUMINUM OR ITS ALLOYS FROM ARTICLES COATED BY THE HOT-DIP METHOD

Adam Gierek; Lech Bajka, both of Katowice, and Jan Kolpak, Myslowice, all of Poland, assignors to Politechmika Slaska Im. Wincentego Pstrowskiego, Gliwice, Poland

Continuation-in-part of Ser. No. 649,514, Jan. 15, 1976, abandoned. This application Jul. 21, 1977, Ser. No. 818,020
Claims priority, application Poland, Jan. 18, 1975, 177420
Int. Cl.[2] C23C *1/08*
U.S. Cl. 427—241 **8 Claims**

1. A method for removing excess molten aluminum or its alloys from metal articles aluminized by the hot-dip molten, especially complex shaped elements, immersed in a bath of molten aluminum or an alloy thereof in an aluminizing furnace comprising the steps of:

withdrawing the articles from the molten bath and its surface with simultaneous rotation during the period of withdrawal at a rate within the range of 10–750 r.p.m., the rate of withdrawal being linear, concurrent with the rate of rotation, and having a range from about 0.1 to 12 meters per minute; and continuing rotating the articles after withdrawal from the bath at a rate within the range of 10 to 1500 r.p.m. until the excess molten aluminum has been removed, both of said rotating steps taking place in the aluminizing furnace.

4,148,943

PROCESS FOR THE PREPARATION OF MATTED PHOTOGRAPHIC LAYERS CONTAINING GELATINE

Bernhard Morcher, and Rolf Brück, both of Leverkusen, Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 18, 1976, Ser. No. 687,611
Claims priority, application Fed. Rep. of Germany, May 22, 1975, 2522692
Int. Cl.[2] B05D *5/00*
U.S. Cl. 427—256 **3 Claims**

1. In a process for the production of a matt surface on a gelatin-containing layer in a photographic material containing layers having gelatin binder the steps which comprise

providing an aqueous gelatin solution, and then
preparing a dispersion of gelatin particles to form a first emulsion by
emulsifying said gelatin in a non-polar solvent selected from the group consisting of cleaning petrol, ligroin, higher boiling paraffins, toluene, xylenes, monoethyl-, diethyl, triethyl- and propylbenzene, mesitylene, tetramethyl- and pentamethylbenzene, biphenyl, diphenylmethane, perchloroethylene and carbon tetrachloride in the presence of emulsifiers in a water-in-oil emulsion comprising an emulsifier having an HLB value of from 3 to 8 and said non-polar solvent,
to provide gelatin particles of from 5 to 200 μ in size,
adding to said first emulsion a second emulsion of an aqueous solution of a hardener in additional non-polar solvent in an amount to effectively contact and harden the gelatin particles,
the particles being capable of swelling,
separating the dispersed, hardened particles from the emulsion and the hardener and subsequently redispersing the hardened particles in water,
then incorporating the hardened gelatin particles redispersion in a casting composition,
applying the casting composition on a substrate,
and drying the casting to a layer with a gelatin binder in which the hardened gelatin particles are contained in the binder content in an amount from 5–50% by weight of the dry weight, and
to form on said layer a peak-to-valley height in the surface of the layer of not more than 3.5 μ.

4,148,944

METHOD FOR PRINTING VINYL FLOORING WITH WATER BASED INK COMPOSITION

Truman J. Ruhf, Emmaus, Pa., assignor to GAF Corporation, New York, N.Y.

Division of Ser. No. 712,086, Aug. 5, 1976, Pat. No. 4,111,878. This application Apr. 24, 1978, Ser. No. 899,351
Int. Cl.[2] B05D *5/00*; C09D *3/80*
U.S. Cl. 427—256 **7 Claims**

1. A method for printing a decorative design on the surface of a layer of gelled or fused vinyl plastic which comprises printing a design on such a layer with a water-based ink having a composition comprising:

(a) a blend of acrylic latex selected from the group consisting of polymers and copolymers of acrylic acid, methacrylic acid, methyl methacrylate, methyl acrylate, ethyl acrylate, ethyl methacrylate and vinyl latex selected from the group consisting of polymers and copolymers of vinyl acetate and vinyl chloride, such latex blend containing between about 20% and about 40% acrylic latex based on such blend;
(b) at least about 5 wt % based upon said latex blend of coalescing agent selected from the group consisting of ethylene glycol monobutylether, propylene glycol, glycerine, hexylene glycol, diethylene glycol monoethyl ether, ethylene glycol and ethylene glycol monobutyl ether acetate;
(c) between 30 and about 80 wt % water based on total ink composition;
(d) between about 1 and about 5 wt % surfactant based on total ink composition; and
(e) between about 10 and about 50 wt % pigment based on solids in the ink composition.

4,148,945

PROCESS OF METAL PLATING ON PLASTICS

Leigh B. Bangs; Carole K. Tuttle, and Syamalarao Evani, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 4, 1974, Ser. No. 439,454
Int. Cl.[2] B05D *3/10*
U.S. Cl. 427—304 **16 Claims**

1. A process for metallizing plastic articles formed from a rubber modified unsaturated carboxylic acid or anhydride containing thermoplastic polymer which comprises the steps of

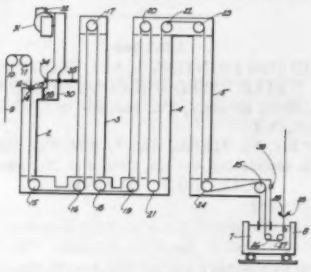
(a) aminating the surface to be metallized by contacting it with an aqueous solution of hydroxylamine or hydrazine,
(b) contacting the aminated surface with a noble metal salt solution and
(c) thereafter, as needed to produce a metallized surface having a resistance of about 100 ohms/sq. or less, treating the surface with a reducing agent;
wherein said polymer contains about 12 to 40 weight percent rubber, about 12 to 30 weight percent of said acid or anhydride and the balance to make 100 percent of one or more monomers copolymerized therewith and wherein said polymer is the product of polymerizing the monomers in the presence of the rubber in a finely divided form.

4,148,946

METHOD FOR MAINTAINING A NON-OXIDIZING ATMOSPHERE AT POSITIVE PRESSURE WITHIN THE METALLIC STRIP PREPARATION FURNACE OF A METALLIC COATING LINE DURING LINE STOPS

Fred Byrd, Lebanon, and James A. Fisher, Middletown, both of Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed Feb. 14, 1977, Ser. No. 768,033
Int. Cl.[2] F27B *9/28*; C23C *1/00*
U.S. Cl. 427—319 6 Claims



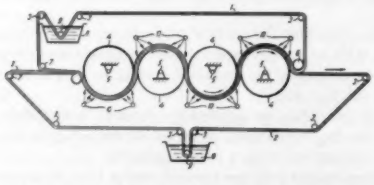
6. In a process of coating a ferrous base metal strip with a molten coating metal, in a coating line of the type having a strip preparation furnace comprising a direct fired furnace with an exhaust system for products of combustion comprising a duct leading from said direct fired furnace to an exhaust fan, a controlled atmosphere heating furnace, at least one cooling chamber and a snout extending beneath the surface of a bath of said molten coating metal, all connected serially in sealed relationship, the steps of providing an air dilution opening in said duct in the form of a gap in said duct to cool and dilute said products of combustion ahead of said fan, providing a door shiftable between an open position out of said gap and a closed position within said gap to seal said direct fired furnace from said exhaust fan and said air dilution opening, shifting said door means from said open position to said closed position at the time of a line stop and at the same time introducing into said strip preparation furnace a non-oxidizing atmosphere at a positive pressure so as to purge said strip preparation furnace and to prevent oxygen from the ambient atmosphere from entering said strip preparation furnace, and cooling said door when in said closed position.

4,148,947

METHOD FOR TREATING LEATHERS

Zdeněk Mičulka, Otrokovice, and Vladislav Janírek, Gottwaldov, both of Czechoslovakia, assignors to Statni vyzkumny ustav kozedelny, Gottwaldov, Czechoslovakia

Continuation of Ser. No. 9,574, Feb. 9, 1970, abandoned. This application May 13, 1974, Ser. No. 469,425
Claims priority, application Czechoslovakia, Feb. 10, 1969, 853-69
Int. Cl.[2] B05D *3/12, 3/02*
U.S. Cl. 427—366 5 Claims



1. A method for continuously treating leather sheet material comprising the steps of supporting said sheet material between a pair of saturatable, belts, moistening said belts, conveying said belts serially through a plurality of distinct treatment stages, simultaneously in each stage applying to one belt heat and to the other belt a cooling media while subjecting said sheet material to pressure and sequentially alternating the sides on which said heat and cooling media are respectively applied in successive adjacent stages and flexing said belts during said conveying.

4,148,948

WATER DISPERSIBLE PAINTS OF IMPROVED LEVELING CHARACTERISTICS

Carol J. Williams, East Amherst, N.Y., assignor to Textron, Inc., Providence, R.I.

Filed May 13, 1977, Ser. No. 796,832
Int. Cl.[2] B05D *1/28*
U.S. Cl. 427—388 C 8 Claims

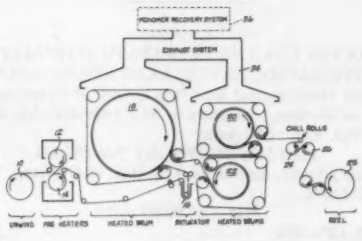
1. A method of roller coating substrates with paint, characterized by good flow and leveling characteristics of the paint on the substrate, which comprises applying to such substrate from a roller, which presses against the substrate and leaves a film of paint between it and the substrate, a water dispersible paint of good leveling characteristics, dispersed in water, which comprises a resinous binder and a sufficient proportion of N,N-di-lower alkyl fatty acid amide in which the fatty acyl portion is of 6 to 14 carbon atoms to improve the flow and leveling characteristics of the point, and curing the paint at an elevated temperature.

4,148,949

METHOD OF INCREASING POLYMERIZATION REACTION RATES IN THE PRODUCTION OF A FIBER-THERMOPLASTIC MATRIX BY IN SITU BULK POLYMERIZATION

Richard R. Casper, and Myron P. Marander, both of Longview, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Continuation of Ser. No. 654,129, Feb. 2, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 877,160
Int. Cl.[2] B05D *1/18, 3/02*
U.S. Cl. 427—391 3 Claims



1. In a method for the production of a moldable, fiber-thermoplastic polymer matrix wherein a fibrous web of less than 0.25-inch thickness and of less than 600 lbs./3,000 ft^2 basis weight is saturated with a liquid-phase composition, comprising a vinyl monomer and a thermally activated polymerization initiator in an amount of 0.5–10% of said composition having a viscosity of less than about 10,000 centipoise, is subjected to heat and results in a matrix comprising at least about 25% polymer by weight of said matrix, the improvement wherein polymerization time is less than eight minutes, comprising:

adjusting the monomer content of the saturated web to a total amount that is the sum of: (a) an amount sufficient to attain the desired polymer content by weight of the matrix at a temperature just equal to that necessary to cause sustained polymerization by said initiator, and (b) an amount 5–70% in excess of (a) wherein said excess amount significantly increases polymerization reaction rates such that a 25% polymer content by weight of the matrix is attained in less than eight minutes;

contacting the composition-containing web with a first heat

transfer surface maintained at a constant temperature sufficient to rapidly initiate and sustain polymerization but low enough such that the exothermic heat of polymerization is substantially absorbed;

controlling monomer loss from said composition-containing web by, simultaneously with the heat transfer contacting step, contacting the surface of the web opposite the heat transfer surface with a flexible, vapor-impervious belt tensioned to ensure sealing contact of the belt and web against the heat transfer surface; and

contacting said composition-containing web, after the desired polymer content by weight of the matrix has been attained, with a second heat transfer surface maintained at a constant temperature sufficient to remove the remaining monomer from the web through evaporation, including sustantially all of the excess amount (b).

4,148,950

EPOXY SURFACER CEMENTS CONTAINING POLYAMINE-KETIMINE MIXTURES

Gordon D. Brindell, Placentia, Calif., and Richard A. Fraccica, Buffalo, N.Y., assignors to Ameron, Inc., Monterey Park, Calif.

Filed Apr. 7, 1978, Ser. No. 894,339
Int. Cl.² C08G *59/56*
U.S. Cl. 427—421 **23 Claims**

1. A room temperature hardening epoxy cement composition comprising:

(1) an epoxy resin;

(2) a mixed amine-ketimine curing agent comprising a cyclic polyamine having at least two aliphatic amino functional groups reactive with the epoxy resin, a portion of said aliphatic amino functional groups in said mixed amine-ketimine curing agent being in ketimine group form; and

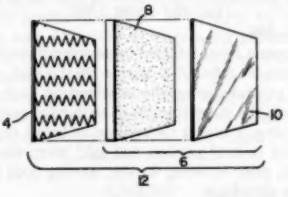
(3) water in at least about the stoichiometric proportion for hydrolyzing said ketimine groups to free primary amine form.

4,148,951

IMAGE RETENTION ON TOPICAL THERMOGRAPH

William T. Clark, III, Number Six Davis Blvd., New Orleans, La. 70121

Filed May 15, 1978, Ser. No. 905,935
Int. Cl.² C09K *3/34*; G01K *11/12*; A61B *5/00*
U.S. Cl. 428—1 **7 Claims**



1. A topical thermographic assembly comprising:

a first layer containing temperature-sensitive liquid crystals, and

a storage screen comprised of

a second layer of relatively low thermal conductivity with respect to the frist layer and adapted for face contact on one side thereof with the first layer and

mirror means on

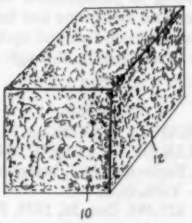
the other side of the second layer for reflecting a thermal image back through the second layer onto the temperature-sensitive liquid crystals in the first layer.

4,148,952

STABLE BLOCKS FORMED OF SHREDDED PAPER-LIKE MATERIAL

Gerald B. Nelson, San Diego, and William J. Prindle, La Mesa, both of Calif., assignors to Papakube Corp., San Diego, Calif.

Continuation of Ser. No. 364,806, May 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 225,122, Feb. 10, 1972, abandoned. This application Oct. 21, 1974, Ser. No. 516,280
Int. Cl.² B65D *71/00*
U.S. Cl. 428—2 **1 Claim**



1. A block comprising:

a plurality of fragments of paper packed tightly together in a stable and homogeneous form and capable of being shredded to form a homogeneous mass;

a water soluble binder having properties of adhering the fragments of paper into the stable and homogeneous form upon an application of heat and pressure to the binder and the fragments, the water soluble binder being included for holding said fragments of paper in closely packed relationship in the stable and homogeneous form;

said block being rigid and stable until being shredded to form the homogeneous mass; and

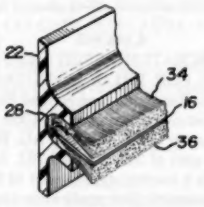
a binder included in the stable block in a percentage by weight in the order of one-half percent (½%) to three percent (3%).

4,148,953

AIR PERVIOUS WEATHERSTRIP

Robert C. Horton, Rochester, N.Y., assignor to Ultrafab, Inc., Victor, N.Y.

Filed Feb. 1, 1978, Ser. No. 874,288
Int. Cl.² D04H *11/00*; E06B *7/22*
U.S. Cl. 428—85 **11 Claims**



1. A weatherstrip mountable on at least one of a pair of relatively movable closure members for providing sealing engagement thereof with controlled air infiltration laterally therethrough without increasing the forces needed to move said members, said weatherstrip comprising

a backing strip which is fixed to one of said pair of closure members when said weatherstrip is mounted thereon,

a membrane of air pervious material extending longitudinally along said backing strip and attached thereto along a line running between the edges of said backing strip, at least one edge of said membrane being free,

two rows of pile fibers extending longitudinally along said backing strip and being attached thereto and projecting therefrom,

said pile fibers projecting outwardly from said backing strip toward the other of said pair of closure members, said rows of pile fibers having a density such that air can pass through said rows when said closure members are in engagement and such that the stiffness of said pile is insufficient to interfere with the movement of said closure members by requiring movement forces of large magnitude, and

said membrane being in juxtaposition with said rows on opposite sides of said membrane and being maintained in vertical position with said free end upright for providing limited passage of air laterally through said weatherstrip.

4,148,954

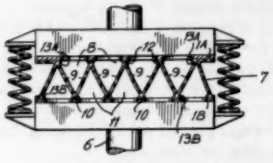
EXPANDED PRODUCT HAVING A PLURALITY OF CELLS OPEN AT ONE END

Walter H. Smarook, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 427,496, Dec. 26, 1973, Pat. No. 3,919,382, which is a continuation-in-part of Ser. No. 213,353, Dec. 29, 1971, abandoned. This application Jun. 18, 1975, Ser. No. 588,056

Int. Cl.[2] B32B *3/12*

U.S. Cl. 428—116 **15 Claims**



1. As an article of commerce, an integrally formed, three dimensional panel comprised of thermoformable material

said panel having a near side and a far side,

the cross section of said panel comprising a plurality of tapered cells with each cell having a plurality of walls and being open at its wider end and closed at its narrow end,

approximately one half of said cells having their open ends facing out from the near side of said panel, and the remainder of said cells having their open ends facing out from the far side of said panel,

and the walls of said cells having I beam configurations.

4,148,955

MATT AND SCRATCH-RESISTANT FILMS AND PROCESS FOR THEIR MANUFACTURE

Franz Breitenfellner, Bensheim, and Roland Fink, Pullach, both of Fed. Rep. of Germany, assignors to Alkor GmbH, Munich, Fed. Rep. of Germany and Ciba-Geigy AG, Basel, Switzerland

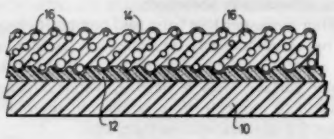
Continuation-in-part of Ser. No. 669,783, Mar. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 524,687, Nov. 18, 1974, abandoned. This application Oct. 13, 1977, Ser. No. 841,761

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1973, 2359060

Int. Cl.[2] B32B *5/16, 19/02*

U.S. Cl. 428—143 **16 Claims**

1. A matted and scratch-resistant, amorphous to crystalline sheet or film of a film-forming thermoplastic and a filler in an amount of 2 to 25% by weight, based on the weight of polymer, said filler consisting of glass spheres of size from 0.5 to 75μ, uniformly distributed therein, said sheet or film having been extruded and taken up in an integrated two-step process whereby said sheet or film was stretched in the melt-fluid state at a decreasing temperature gradient between the temperature of the melt extrusion means and the temperature of the take-up means, and said sheet or film having a surface characterized by



projecting domes of the glass spheres which are still completely covered by thermoplastic.

4,148,956

THERMOPLASTIC MOULDING COMPOSITION AND ITS USE AND SHEETS MADE FROM THE MOULDING COMPOSITION

Franz Breitenfellner, Bensheim, and Roland Fink, Pullach, both of Fed. Rep. of Germany, assignors to Alkor GmbH, Munich, Fed. Rep. of Germany and Ciba-Geigy AG, Basel, Switzerland

Filed Dec. 22, 1977, Ser. No. 863,547

Claims priority, application Switzerland, Dec. 31, 1976, 16504/76

Int. Cl.[2] C08L *67/06*

U.S. Cl. 428—156 **22 Claims**

1. A thermoplastic molding composition which comprises:

(a) from 95 to 5% by weight of components (a) plus (b) of a linear thermoplastic polyester or mixture of polyesters, having an intrinsic viscosity of at least 0.6 dl/g, measured on a solution of 1 gram of polyester in 100 ml of solvent consisting of equal parts of phenol and 1,1,2,2-tetrachloroethane, at 30° C., and

(b) from 5 to 95% by weight of components (a) plus (b) of a copolymer of styrene and acrylonitrile with alpha-methylstyrene, an alkyl acrylate or mixture of alpha-methylstyrene and alkyl acrylate, said alkyl acrylate having alkyl of 1 to 6 carbon atoms, said copolymer (b) being from 10 to 85% by weight of (b) of styrene, from 5 to 40% by weight of (b) of acrylonitrile, and from 5 to 50% by weight of (b) of alpha-methylstyrene, an alkyl acrylate or mixture thereof.

4,148,957

WOVEN BELTING WITH TUBULAR EDGE PORTIONS

Johann Berger, and Josef Berger, both of Obere Schlohstrasse 114, 7071 Alfdorf, Fed. Rep. of Germany

Filed Dec. 28, 1977, Ser. No. 865,112

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1976, 2659789

Int. Cl.[2] B32B *3/02*

U.S. Cl. 428—193 **3 Claims**

1. Belting made from a fabric comprising interwoven warp and weft threads defining a single-ply central portion and tubular edge portions integrally attached on each side of said central portion, the warp threads in each edge portion having, after heat-setting, a higher elongation at break than the warp threads in said central portion and said warp threads in said edge portions, prior to being woven, having been subjected to a preliminary shrinkage

$$v \approx m - f,$$

wherein

m = the maximum possible shrinkage of said warp threads in said edge portions,

f = the additional shrinkage exhibited by said fabric as it is heat-set and

≈ means "almost equal to",

said warp threads in said edge portions having been shrunk to substantially their maximum extent upon said heat-setting of said fabric.

4,148,958

"BREATHING" LINING MATERIAL HAVING A SHAPING EFFECT COMPOSED OF AN ORIENTED FIBER LAYER AND A RANDOMLY ORIENTED FIBER LAYER

Kurt Tischer, Hemsbach, and Walter Fottinger, Weinheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,257

Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722429

Int. Cl.[2] A41D *27/02, 27/06;* B32B *5/12, 7/14*

U.S. Cl. 428—196 13 Claims

1. A breathable lining and shaping material especially suited for garments, comprising a nonwoven layer of randomly arranged fibers superposed on a nonwoven layer of oriented fibers, means holding together the fibers of each layer and holding the layers together, and an outer binder imprinted on the outer face of the oriented fiber layer for the purpose of bonding the oriented fibers of the non-woven layer together, the weight of the outer binder being at most 50% of the material weight, the length to width strength ratio of the randomly arranged fiber layer ranging from about 4:1 to 1:4.

7. A material according to claim 1, wherein the holding means at least in part comprises needled fibers extending transversely.

8. A material according to claim 1, including a heat activatable adhesive at spaced locations on the outer face of the randomly arranged layer, whereby the material can be joined to the underside of a garment by hot pressing.

4,148,959

LAMINATED COATING SYSTEM FOR INSULATION

Rezsó Csikós; András Balogh, both of Veszprém; József Herendi, Balatonalmádi, and Katalin Gregor, nee Balogh, Veszprem, all of Hungary, assignors to Magyar Asvanyolaj es Foldgaz Kiserleti Intezet, Veszprem, Hungary

Filed May 16, 1977, Ser. No. 796,887

Int. Cl.[2] B32B *11/00, 11/04;* C09J *7/02*

U.S. Cl. 428—215 14 Claims

1. A laminated coating system, useful for insulation of underground pipe lines, metal and concrete objects, which comprises:

a PVC-foil carrier sheet having a thickness of 0.2 to 0.5 mm;

a self-adhesion ensuring layer on said carrier sheet and comprising 70 to 100% by weight of synthetic rubber; 0 to 16% by weight of bitumen and 0 to 14% by weight of talc, said self-adhesion ensuring layer having a thickness of 0.05 to 0.2 mm,

further including a ground layer on said carrier sheet and interposed between the carrier sheet and the self-adhesion ensuring layer, said ground layer comprising 5 to 20% by weight of synthetic rubber, 10 to 25% by weight of a softening and adhesiveness improving polymer having a molecular weight of 500 to 1200 and an iodine-bromine number of 80 to 120 $gI_2/100$ g, 0.1% to 1% by weight of a bactericide and 54 to 84.9% by weight of bitumen or a 4:1 mixture of bitumen and a pyrolytic resin, said ground having a total thickness of 0.05 to 0.1 mm.

4,148,960

POLYESTER HAVING IMPROVED ANTISTATIC PROPERTIES

Kai-Lim W. Yung; Bernard Silverman, both of Raleigh, and Virginia C. Menikheim, Chapel Hill, all of N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1977, Ser. No. 864,884

Int. Cl.[2] C08L *77/00*

U.S. Cl. 428—288 14 Claims

1. A polymeric composition having improved antistatic properties, said composition comprising a melt blend of a polyester and a block terpolymer selected from the group consisting of lactam-polyolpolyacyl lactam and lactam-polyolacylpolylactam, said composition having at least 5.1 wt. % polyol.

4,148,961

WINDLACE CARRIER

Peter V. Paulus, Ypsilanti, and Norman C. Jackson, Livonia, both of Mich., assignors to The Standard Products Company, Dearborn, Mich.

Continuation of Ser. No. 707,200, Jul. 21, 1976, abandoned. This application Dec. 15, 1977, Ser. No. 860,729

Int. Cl.[2] E06B *7/16*

U.S. Cl. 428—358 1 Claim

1. A carrier for an elongated trim strip of U-shaped cross section comprising a continuous serpentine wire folded transversely back and forth about longitudinal axes to define laterally extending center portions joined by reentrantly folded longitudinally extending end portions, the center portions of said wire being folded about a pair of spaced longitudinally extending axes to define said U-shaped cross section, said axes being spaced inwardly from the end portions of said wire an amount sufficient to make the legs approximately equal to the bight of said U-shaped cross section, and a one piece plastic stabilizing element disposed centrally of and engaging the bight only of the center portion of said wire, said stabilizing element having portions extending between and above and below said wire whereby the center-portions thereof are positively spaced from one another yet are foldable about said longitudinal axes without requiring folding of said stabilizing element.

4,148,962

FIBROUS REFRACTORY COMPOSITE INSULATION

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, Daniel B. Leiser, San Jose, Calif.; Howard E. Goldstein, Saratoga, Calif., and Marnell Smith, San Jose, Calif.

Filed Sep. 8, 1978, Ser. No. 940,688

Int. Cl.[2] C04B *35/80, 35/14, 35/18*

U.S. Cl. 428—366 8 Claims

1. A refractory composite consisting essentially of aluminosilicate fibers and silica fibers in a weight ratio within the range of about 19:1 to 1:19, and about 0.5 to 30% boron oxide, based on the total weight of the fibers.

4,148,963

ADHESIVE-COATING COMPOSITION FOR ORGANIC OR MINERAL FILAMENTS

Paul Bourrain, Ecully, and Pierre Giroud, La Verpillere, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

Filed Aug. 2, 1977, Ser. No. 821,171

Claims priority, application France, Aug. 4, 1976, 76 24022; Jun. 22, 1977, 77 19357; Jun. 27, 1977, 77 19713

Int. Cl.[2] C08L *61/12*

U.S. Cl. 428—392 2 Claims

1. New adhesive-coating composition which makes it possible to improve the adhesion of heat-stable, high-modulus, modal, polyester yarns and of glass fibres, to compounded rubbers based either on natural rubber or on synthetic rubber, characterised in that it consists of:

a resin solution A containing:	
softened water	547 to 8,954 parts by weight
sodium hydroxide	1 to 2 parts by weight
precondensed resorcinol/ formaldehyde resin	48 to 57 parts by weight
40% strength formaldehyde	14.75 to 17.5 parts by weight
a latex solution B containing:	
latex based on vinylpyridine	805 to 875 parts by weight
polychloroprene latex	46 to 92 parts by weight
28% strength ammonium hydroxide	80 parts by weight
a latex solution C containing:	
softened water	200 parts by weight
28% strength ammonium hydroxide	15 parts by weight
dicarboxylated butadiene styrene resin	350 parts by weight

and in that the proportion by weight of solids relative to the weight of the bath varies between 6 and 30%, the proportion by weight of dry resin relative to the total weight of solids varies from 8% to 10%, the ratio of dry latex to the weight of dry resin varies from 8/1 to 11/1, the proportion by weight of dry chlorinated latex relative to the total weight of dry latex varies from 5 to 10%, the proportion by weight of dry latex relative to the total amount of solids varies from 86 to 87% and the final pH of the composition is 9.6±0.3.

4,148,964

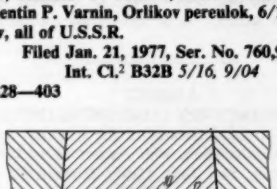
POLYCRYSTALLINE SUPERHARD MATERIAL AND METHOD OF PRODUCING THEREOF

Dmitry V. Fedoseev, ulitsa akademika Pavlova, 40, kv. 140; Boris V. Deryagin, ulitsa Vavilova, 37a, kv. 54, both of Moscow; Valentin N. Bakul, ulitsa Kirova, 34a, kv. 12, Kiev; Alexei I. Prikhna, ulitsa Vyshgorodskaya, 33, kv.20, Kiev; Valentin K. Gerasimenko, ulitsa Bolshaya Mastitskaya, 81, kv. 1, Kiev; Vladimir G. Poltoratsky, ulitsa Shamrylo, 8, kv. 39, Kiev; Jury I. Nikitin, ulitsa Krasnopolskaya, 11/13, kv. 41, Kiev; Stanislav P. Vnukov, ulitsa Butlerova, 10, kv. 156, and Valentin P. Varnin, Orlikov pereulok, 6/1, kv. 57, both of Moscow, all of U.S.S.R.

Filed Jan. 21, 1977, Ser. No. 760,902

Int. Cl.[2] B32B *5/16, 9/04*

U.S. Cl. 428—403 **1 Claim**



1. A polycrystalline superhard material of cubic boron nitride, comprising particles of cubic boron nitride of about 0.3 to 60 microns sintered at a temperature of at least 1600° C., under pressure of no less than 50 kbar, said particles of cubic boron nitride being coated over their entire surface with a layer of about 1 to 100 Å thickness of crystalline compounds of the chemical formula $B_xN_yC_z$ wherein x, y & z can assume any value from 0 to 1 with the proviso that the crystals of said coated layer adjacent to said boron nitride have the above formula wherein x and y approach 1, and z approaches 0, while the compounds in said coating layer distal to said boron nitride particles have the above formula wherein x and y each approach 0, and z approaches 1 and wherein said compounds bond said particles of cubic boron nitride with each other, and the carbon contained in said crystalline is about 1.0 to 10% by weight of the total weight of the polycrystalline material.

4,148,965

METHOD AND APPARATUS FOR PROCESSING A BODY HAVING A VITREOUS SURFACE

André Jelli, Tervuren, Belgium, assignor to BFG Glassgroup, Paris, France

Filed Mar. 22, 1977, Ser. No. 780,013

Claims priority, application Luxembourg, Mar. 29, 1976, 74666

Int. Cl.[2] B32B *17/00*

U.S. Cl. 428—410 **17 Claims**

1. A method of processing a body having a surface of which at least a portion is vitreous and during which the vitreous region or regions of said surface become(s) activated, comprising contacting the surface, while it is at elevated temperature, with gaseous hydrogen in a non-oxidizing, dehydrated atmosphere, after such hydrogen has been conditioned by contact at elevated temperature with a substance which is a metal or metal alloy comprising at least one metal selected from one or more of groups IIIB, IVB, VB, VIB, VIIB and VIII of the periodic table of elements, and which is capable of provoking the fixation of hydrogen to the vitreous region or regions of said surface, to thereby activate the vitreous surface such that an organic radical can be directly grafted onto said surface.

17. A body having a surface of which at least a portion is vitreous and has been processed by a method according to claim 11.

4,148,966

POLYARYLENE SULPHIDE COATED BACKING

Glyndwr J. Davies, London, England, assignor to The Glacier Metal Company Limited, Middlesex, England

Filed Mar. 11, 1975, Ser. No. 557,291

Claims priority, application United Kingdom, Jan. 22, 1975, 2750/75

Int. Cl.[2] B32B *9/04, 15/04*

U.S. Cl. 428—411 **3 Claims**

1. A coated backing in which the backing is aluminum or aluminum alloy and in which the coating is a heat-treated polyarylene sulphide resin incorporating between 1–3% by weight sodium carbonate for establishing a bond between said backing and said coating.

2. A coated backing in which the backing is aluminum or aluminum alloy and in which the coating is a heat-treated polyarylene sulphide resin incorporating between 0.1 and 5.0% by weight lithium hydroxide, for establishing a bond between said backing and said coating.

3. A coated backing in which the backing is aluminum or aluminum alloy and in which the coating is a heat-treated polyarylene sulphide resin incorporating between 0.1 and 5.0% calcium hydroxide for establishing a bond between said backing and said coating.

4,148,967

METALLIZED PLASTIC MOLDED PRODUCT AND METHOD FOR PRODUCING SAME

Mitsuo Satoh, Nagoya; Norio Miyagawa, Ohtake, and Juichi Kobayashi, Aichi, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

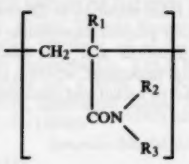
Filed Apr. 12, 1978, Ser. No. 895,582

Claims priority, application Japan, Apr. 20, 1977, 52-45600

Int. Cl.[2] B05D *3/06;* B32D *15/08, 27/30*

U.S. Cl. 428—416 **12 Claims**

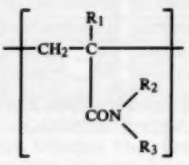
1. A metallized plastic molded product which comprises a molded plastic substrate and (1) a base coat layer, (2) a dry metal film layer, (3) an inter coating layer and (4) a top coating layer, characterized in that said inter coating layer (3) is a cured layer of an ultraviolet curing composition comprising 5–80% by weight of a resin which contains 5–50% by weight of the repeating unit represented by the formula I:



(I)

wherein R_1 is H or CH_3, R_2 is H or C_1–C_8 alkyl, and R_3 is C_1–C_8 alkyl, and which has a molecular weight of 4,000–200,000 and 20–95% by weight of a compound having polymerizable unsaturated groups and said top coating layer (4) is a cured layer of an ultraviolet curing composition comprising 40–90% by weight of a urethane modified polyvinyl compound or an epoxy modified polyvinyl compound and 10–60% by weight of a polyvinyl compound which has a molecular weight of 170–1,000 and contains at least 2 polymerizable unsaturated groups per molecule.

7. A method for producing a metallized plastic molded product comprising subjecting a molded plastic substrate to (1) a base coating treatment, (2) a dry type metal film forming treatment, (3) an inter coating treatment and (4) a top coating treatment, characterized in that said inter coating treatment (3) comprises coating said base coated, metallized substrate with an ultraviolet curing composition comprising 5–80% by weight of a resin which contains 5–50% by weight of the repeating unit represented by the formula I:



(I)

wherein R_1 is H or CH_3, R_2 is H or C_1–C_8 alkyl, and R_3 is C_1–C_8 alkyl, and which has a molecular weight of 4,000–200,000, and 20–95% by weight of a compound having polymerizable unsaturated groups, and irradiating said coating with ultraviolet rays; and said top coating treatment (4) comprises coating said inter coated substrate with an ultraviolet curing composition comprising 40–90% by weight of a urethane modified polyvinyl compound or an epoxy modified polyvinyl compound and 10–60% by weight of a polyvinyl compound which has a molecular weight of 170–1,000 and contains at least 2 polymerizable unsaturated groups per molecule, and irradiating said coating with ultraviolet rays.

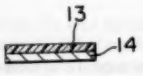
4,148,968
RECEIVING SHEET

Shinichiro Nagashima, Tokyo; Kaichi Tsuchiya, Fuchu; Yoshihiro Sakamoto; Hiroshi Yamakami, both of Tokyo, and Seiji Tomari, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 293,160, Sep. 28, 1972, Pat. No. 3,880,656. This application Mar. 20, 1975, Ser. No. 560,515

Int. Cl.[2] **B41M** *3/12, 5/00*

U.S. Cl. 428—454 **38 Claims**



1. A receiving sheet for producing a low-temperature, heat-fixed, colored image from a colorless or light colored electrophotographic toner image containing a color forming agent (A), said receiving sheet consisting essentially of:

a color forming agent (B) selected from the group consisting of rosin modified maleic acid resin, hydrolyzed product of copolymer of styrene and maleic anhydride, hydrolyzed product of polymer of carboxy polyethylene, hydrolyzed product of copolymer of vinyl methyl ether and maleic anhydride, hydrolyzed product of copolymer of ethylene and maleic anhydride, Japanese acid clay, bentonite, diatomaceous earth, and phenolic material; and

a material having a melting point ranging from 40–130° C. selected from the group consisting of fatty acid, fatty acid metal salt, fatty acid ester, fatty acid amide, diphenyl phthalate, dicyclohexyl phthalate, ethylene glycol dibenzoate and dimethyl isophthalate;

wherein said receiving sheet contains 10–30 parts of said material having a melting point ranging from 40–130° C. per 50 parts of said color forming agent (B);

and wherein said color forming agent (B) is adapted to react with the color forming agent (A) in the toner image upon heating to produce said low-temperature, heat fixed, colored image.

4,148,969
POLYPARABANIC ACID/COPPER FOIL LAMINATES OBTAINED BY DIRECT SOLUTION CASTING

Don J. Henderson, Worthington, Ohio, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 663,596, Mar. 3, 1976, abandoned. This application Sep. 12, 1977, Ser. No. 832,760

Int. Cl.[2] **B32B** *15/08*

U.S. Cl. 428—458 **11 Claims**

1. A process of forming flexible coated articles of polyparabanic acid strongly adhered to a supportive copper substrate which comprises in combination the steps of:

(a) forming a solution of polyparabanic acid with an inherent viscosity of 0.4–2.5 having a viscosity of from 1,000 to 50,000 cps, Brookfield viscosity, at least 25% of the polyparabanic acid being of an aromatic type,

(b) coating a thin layer of said solution directly on a copper substrate in the absence of intermediate adhesives,

(c) heating said thin layer of polyparabanic acid solution to evaporate said solvent from said film and

(d) recovering a flexible coated article having a relatively dry layer of polyparabanic acid strongly adhered directly to said copper substrate.

4,148,970
LUBRICATING COMPOSITION APPLIED OVER PRIMER COAT

George A. McIntosh, North Madison, Ohio, and Russell Smith, Tinton Falls, N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Dec. 30, 1977, Ser. No. 865,986

Int. Cl.[2] **B21B** *45/02;* **C10M** *7/24, 7/02, 7/08*

U.S. Cl. 428—469 **16 Claims**

13. A coated metal substrate having a coating providing coating protection to said substrate, said coating comprising a primer coat containing finely divided particulate substance, with said primer coat having an exposed surface film of lubricating composition comprising a metallic stearate, emulsifier, titanium dioxide and Xanthomonas hydrophilic colloid, all in aqueous medium.

16. A process for deforming coated metal having a primer coat, while retarding coating loss during metal deformation, wherein said primer coat contains finely divided particulate substance, which process comprises, establishing on said primer coat a surface film of lubricating composition and then deforming said coated metal having resulting lubricated coating, wherein said lubricating composition comprises a metallic stearate, emulsifier, titanium dioxide and Xanthomonas hydrophilic colloid, all in aqueous medium.

4,148,971

FLAME SPRAYING MATERIALS AND PROCESS FOR PRODUCING THE SAME

Hideo Kawano; Oelschlagel Dietrich; Katumi Nakata, and Kenkichi Yamaji, all of Hitachi, Japan, assignors to Hitachi Cable, Ltd., Japan

Filed Sep. 6, 1977, Ser. No. 830,498
Claims priority, application Japan, Sep. 8, 1976, 51-107563
Int. Cl.[2] B05D *1/08;* B22F *7/08;* B32B *15/02*
U.S. Cl. 428—558 14 Claims

1. A flame spraying material in the form of a composite wire comprising zinc and aluminum and consisting of a core of compacted powders of zinc, or a zinc-aluminum alloy or of compacted admixed powders of zinc and aluminum, said core being tightly enveloped by a covering material consisting of aluminum, whereby said covering material has a higher melting point and higher thermal conductivity than said core.

7. A method of production of a wire shaped flame spraying material comprising zinc or zinc and aluminum and consisting of a compacted powder of zinc or zinc-aluminum alloy powder or compacted admixed powders of zinc and aluminum, which method comprises the steps of:

(a) rotating a movable wheel, having an endless groove at its peripheral surface;

(b) charging said powders into a path formed by said groove of said movable wheel and a fixed block member, which member adjoins and slightly extends in the groove of said movable wheel for a part of the circumference of said movable wheel in such a way that the path thus formed diminishes in cross section in the direction of rotation of said movable wheel;

(c) moving said powders through said path by sliding frictional force generated by the rotation of the movable wheel and pressing said powders through the opening of said path with minimum cross section; and

(d) further forming the compacted wire to obtain a wire of suitable shape and diameter.

4,148,972

HEATSEALABLE POLYPROPYLENE FILM LAMINATE

Toshihiro Yamane, and Katsuhiro Tsuchiya, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 22, 1977, Ser. No. 808,795
Claims priority, applicati_n Japan, Jun. 22, 1976, 51-72732
Int. Cl.[2] B32B *27/08*
U.S. Cl. 428—515 7 Claims

1. A heatsealable film laminate adapted for packaging comprising a base layer consisting essentially of a polypropylene-ionomer blend, wherein said blend comprises 92–99 wt. % polypropylene and 1–8 wt. % ionomer, said base layer having an ionomer layer affixed on at least one surface thereof.

4,148,973

HOMOGENEOUS, DUCTILE BRAZING FOILS

Peter Sexton, Randolph, and Nicholas J. DeCristofaro, Madison, both of N.J., assignors to Allied Chemical Corporation, Morris Township, N.J.

Continuation of Ser. No. 751,000, Dec. 15, 1976, abandoned.
This application Jun. 5, 1978, Ser. No. 912,667
Int. Cl.[2] B32B *15/00*
U.S. Cl. 428—680 5 Claims

1. A brazed metal article, said article having been brazed with a filler metal in the form of a homogeneous, ductile brazing foil composed of metastable material having at least 50 percent glassy structure, said foil having a composition selected from the group consisting of:

(a) 0 to about 3.5 atom percent iron, 0 to about 8 atom percent chromium, about 7 to 15 atom percent boron, about 5 to 10 atom percent silicon, and the balance essentially nickel and incidental impurities, wherein the composition is such that the total of iron, nickel and chromium ranges from about 78 to 84 atom percent and the total of boron and silicon ranges from about 16 to 22 atom percent and

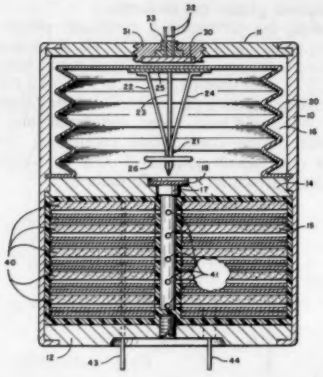
(b) 0 to about 16 atom percent chromium, about 16 to 22 atom percent phosphorus and the balance essentially nickel and incidental impurities, wherein the composition is such that the total of nickel and chromium ranges from about 78 to 84 atom percent.

4,148,974

STABLE ELECTROLYTE FOR RESERVE ELECTROCHEMICAL CELLS

William J. Eppley, Skippack, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 9, 1976, Ser. No. 748,983
Int. Cl.[2] H01M *6/14, 6/38*
U.S. Cl. 429—101 4 Claims



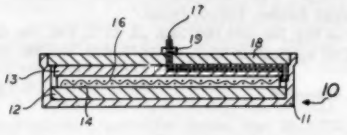
1. An electrochemical cell device, comprising: a lithium anode; a cell completing mixture remote from said anode, comprising acetonitrile, lithium hexafluroarsenate and sulfur dioxide; and reserve means for admixing said anode and said cell completing mixture to form an electrochemical cell.

4,148,975

LITHIUM IODINE PRIMARY CELLS HAVING NOVEL PELLETIZED DEPOLARIZER

Alan A. Schneider, Reisterstown; George C. Bowser, Glyndon, and Lurman H. Foxwell, Baltimore, all of Md., assignors to Catalyst Research Corporation, Baltimore, Md.

Filed Apr. 3, 1978, Ser. No. 892,655
Int. Cl.[2] H01M *4/08, 6/00*
U.S. Cl. 429—174 10 Claims



1. A depolarizer for use in lithium primary cells comprising a pelletized particulate mixture of iodine, an organic polymer consisting of either poly-2-vinylpyridine or poly-2-vinylquinoline having a weight average molecular weight of greater than about 1×10^3 and a charge transfer complex consisting of said selected polymer and iodine wherein the iodine is present in an amount of from about 3 to 30 parts for each part of total organic.

4,148,976

SOLID STATE LITHIUM-IODINE PRIMARY BATTERY

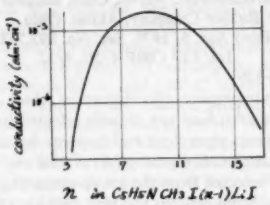
Satoshi Sekido, Kyoto; Tadashi Sotomura, Kashiwara, and Yoshito Ninomiya, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 5, 1978, Ser. No. 922,049

Claims priority, application Japan, Jul. 7, 1977, 52/081838; Nov. 10, 1977, 52/135400

Int. Cl.[2] H01M *6/18*

U.S. Cl. 429—191 14 Claims



1. A substantially anhydrous cell comprising a solid lithium anode, a solid electronically conductive iodine cathode containing a charge transfer complex of iodine with a 1-normal-alkyl-pyridinium iodide, and a solid electrolyte of lithium iodide doped with the 1-normal-alkyl-pyridinium iodide.

4,148,977

GALVANIC CELL EMPLOYING COPPER ORE ACTIVE CATHODE MATERIALS

Morris Eisenberg, Mountain View, Calif., assignor to Electrochimica Corporation, Mountain View, Calif.

Filed Mar. 22, 1978, Ser. No. 889,036

Int. Cl.[2] H01M *6/14*

U.S. Cl. 429—194 3 Claims

1. In a galvanic cell having a cathode, an anode and an electrolyte, the improvement comprising the active cathode material being a simple or complex copper sulfide compound contained in a copper ore whether in a natural form, in a concentrated form with at least some silica or silicate removed, or in a smelter producing matte form.

4,148,978

POSITIVE ELECTRODE FOR STORAGE BATTERY

August Winsel, Kelkheim; Ernst Voss, Liederback; Welf Dennstedt, and Waldemar Borger, both of Kelkheim, all of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Leineufer, Fed. Rep. of Germany

Filed Nov. 23, 1977, Ser. No. 854,275

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1976, 2656506; Jul. 7, 1977, 2715628

Int. Cl.[2] H01M *4/14*

U.S. Cl. 429—217 13 Claims

1. A positive electrode for lead storage batteries having an electrode support frame of antimony free or antimony poor lead alloy which contains antimony in the electrochemically active mass, characterized in that

the active mass contains distributed storage bodies of substantial antimony content, said bodies being so constructed as to release antimony into the surrounding mass progressively throughout the life span of the storage battery.

4,148,979

METHOD OF IMPROVING CHARACTERISTICS OF CATION-EXCHANGE MEMBRANE BY SWELLING IN WATER MISCIBLE ORGANIC SOLVENT

Shunichi Asami; Toru Seita, and Akihiko Shimizu, all of Shinnanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Filed Apr. 25, 1977, Ser. No. 790,818

Claims priority, application Japan, Apr. 27, 1976, 51-47233; May 26, 1976, 51-60156; Dec. 7, 1976, 51-146160

Int. Cl.[2] B01D *15/04;* C08F *14/18;* C08J *5/22*

U.S. Cl. 521—27 10 Claims

1. A method of improving characteristics of a cation-exchange membrane, which comprises: swelling a homogeneous cation-exchange membrane formed from at least one fluorinated polymer having cation-exchangeable groups with a water miscible organic solvent; and then evaporating said organic solvent from the swollen membrane, thereby obtaining a solvent free membrane.

4,148,980

NOVEL CARBOXYLATE CATALYSTS FOR THE PREPARATION OF FOAMS CHARACTERIZED BY POLYISOCYANURATE, POLYURETHANE AND POLY (URETHANE-ISOCYANURATE) LINKAGES

Thirumurti Narayan, Riverview, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 792,519, Mar. 3, 1977, abandoned. This application May 9, 1978, Ser. No. 884,937

Int. Cl.[2] C08G *18/14, 18/20;* C09K *3/00*

U.S. Cl. 521—115 20 Claims

1. A composition which is the reaction product of

(a) a tertiary amine selected from the group consisting of 1,3,5-tris(N,N-dialkylaminoalkyl)-s-hexahydrotriazines, pyridine and bis(N,N-dialkylaminoalkyl)ethers,

(b) an alkylene oxide containing from 2 to 18 carbon atoms, and

(c) a mono-carboxylic acid

employing a mole ratio of (a) to (b) to (c) of from 1:0.5:1 to 1:6:6.

6. A process for the preparation of a cellular foam characterized by polyisocyanurate linkages which comprises reacting an organic polyisocyanate in the presence of a catalytically sufficient amount of a catalyst which is the reaction product of

(a) a tertiary amine, selected from the group consisting of 1,3,5-tris(N,N-dialkylaminoalkyl)-s-hexahydrotriazines, pyridine and bis(N,N-dialkylaminoalkyl)ethers,

(b) an alkylene oxide containing from 2 to 18 carbon atoms, and

(c) a mono-carboxylic acid

employing a mole ratio of (a) to (b) to (c) of from 1:0.5:1 to 1:6:6.

4,148,981

DITHIOPHOSPHORYLATED COPOLYMERS OF AZIRIDINEETHYL ACRYLATES OR METHACRYLATES AND ALKYL ACRYLATES OR METHACRYLATES

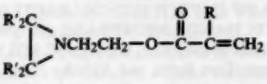
John P. Pellegrini, Jr., Pittsburgh, and Helen I. Thayer, Oakmont, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 18, 1977, Ser. No. 843,331

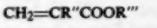
Int. Cl.[2] C08F *8/40, 222/06*

U.S. Cl. 526—16 15 Claims

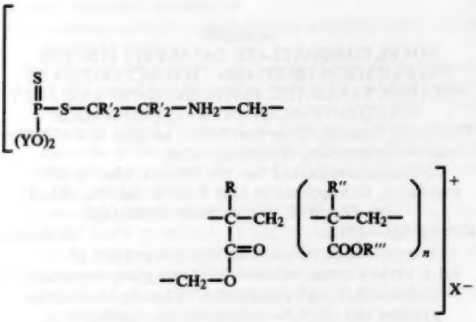
1. A dialkyl, diaryl, dialkaryl, diarylalkyl or diaryloxyalkyl dithiophosphorylated copolymer comprising the copolymer of (A) a monomeric aziridineethyl acrylate or methacrylate having the formula:



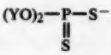
wherein R is selected from the group consisting of hydrogen and alkyl having from about 1 to about 6 carbon atoms; and each R′ is either alike or different, selected from hydrogen and lower alkyl groups of from about 1 to about 8 carbon atoms; and (B) a monomeric alkyl acrylate or methacrylate of the formula:



wherein R″ is selected from the group of hydrogen or methyl, and R‴ is selected from straight and branched chain alkyl groups containing from about 1 to about 30 carbon atoms; with the mole ratio of A to B being in the range of from about 1:99 to about 30:60; said copolymer comprising the formula:



wherein R, R′, R″, and R‴ are as described above; and Y is alkyl, aryl, alkaryl, arylalkyl or aryloxyalkyl having from about 1 to about 30 carbon atoms; X^- is



wherein Y is defined above and wherein n is an integer of from about 1 to about 300; said copolymer having a molecular weight of from about 20,000 to about 300,000; and at least 0.1 weight percent comprising the dialkyl, diaryl, dialkaryl, diarylalkyl or diaryloxyalkyl dithiophosphate moiety.

4,148,982

THERMAL MODIFICATION METHOD FOR FLUOROELASTOMERS

Mituharu Morozumi, Yokohama; Gen Kojima, Machida, and Takeshi Abe, Yokohama, all of Japan, assignors to Asahi Glass Co. Ltd., Tokyo, Japan

Filed Jul. 6, 1977, Ser. No. 813,346
Claims priority, application Japan, Jul. 16, 1976, 51-83973
Int. Cl.[2] C08F *8/06*
U.S. Cl. 526—58 **10 Claims**

1. A method for thermally modifying a fluoroelastomer, which comprises:

heating a fluoroelastomer selected from the group consisting of propylene-tetrafluoroethylene based copolymers, vinylidene-fluoride-hexafluoropropylene based copolymers, vinylidenefluoride-pentafluoropropylene based copolymers, and vinylidenefluoride-trifluorochloroethylene based copolymers having a number average molecular weight of more than 30,000 at a temperature at which it thermally degrades ranging from 250° to 450° C. for more than 15 minutes in the presence of oxygen while maintaining the elasticity of said fluoroelastomer.

4,148,983

POLYMERIZATION AND COPOLYMERIZATION OF TRANS-PIPERYLENE AND ISOPRENE

Morford C. Throckmorton, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 5, 1978, Ser. No. 893,725
Int. Cl.[2] C08F *4/50, 4/52*
U.S. Cl. 526—139 **11 Claims**

1. A process to prepare solid elastomers which comprises the polymerization of at least one diolefin selected from the group consisting of trans-piperylene and isoprene by subjecting said diolefins to a catalyst comprising (A) at least one organometallic compound selected from the group consisting of aluminum trialkyls, magnesium dialkyls and zinc dialkyls, (B) at least one soluble chromium compound selected from the group consisting of chromium salts of organic acids containing from 2 to 20 carbon atoms, organic complex compounds of chromium containing tridentate ligands and π-bonded organo chromium compounds and (C) at least one phosphite compound selected from tris(2-chloroethyl)phosphite, dialkyl hydrogen phosphites containing from 1 to 20 carbon atoms in the alkyl group and containing at least one phosphinic hydrogen atom and diaryl hydrogen phosphites containing from 6 to 12 carbon atoms in the aryl group and containing at least one phosphinic hydrogen atom.

4,148,984

CATALYST SYSTEM AND PROCESS FOR POLYMERIZATION OF CONJUGATGED DIENES THEREWITH

Adel F. Halasa, Bath, and James E. Hall, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 809,819, Jun. 24, 1977, Pat. No. 4,107,081. This application Apr. 26, 1978, Ser. No. 900,362
Int. Cl.[2] C08F *4/08, 4/52, 36/04, 36/06*
U.S. Cl. 526—187 **4 Claims**

1. The process for the hydrocarbon solution polymerization of a monomer composition containing at least 70 percent by weight of a conjugated diene to a polymer having no more than 55 percent 1,2-microstructure comprising the steps of maintaining said monomer at a temperature of 150°–280° F. and in intimate contact with a catalyst composition consisting essentially of

(a) a trihydrocarbyl aluminum compound in which the hydrocarbyl radicals have 1–10 carbon atoms selected from the class consisting of alkyl, aryl and cycloalkyl radicals; and

(b) an alkali metal compound of the formula M—Y—R, wherein M represents Li, Na, or K; Y represents O,S or NR^1; R represents H or a hydrocarbyl radical of 1–10 carbon atoms; R^1 represents a hydrocarbyl or acyl radical of 1–10 carbon atoms, except that when Y is NR^1, the R and R^1 can each represent divalent groups so that together they form with the N a piperidyl, morpholino or diethylene diamino group; the concentrations of the respective components giving an Al/alkali metal molar ratio of 0.1/1 to 10/1, and said aluminum component being present in a concentration of 1–6 millimoles per 100 grams of monomer.

4,148,985

POLYMERIZATION PROCESS

Yves de Zarauz, Le Cendre, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Division of Ser. No. 788,031, Apr. 15, 1977, Pat. No. 4,112,210, which is a continuation-in-part of Ser. No. 659,905, Feb. 20, 1976, abandoned. This application Apr. 29, 1977, Ser. No. 792,322

Claims priority, application France, Feb. 27, 1975, 75 06239

Int. Cl.[2] C08F *4/08, 4/10*

U.S. Cl. 526—177 **9 Claims**

1. A process of producing homopolymers of conjugated dienes or copolymers of conjugated dienes with other conjugated dienes or with vinyl aromatic compounds to form elastomeric products which comprises reacting the monomers at a temperature between 50° C. and 120° C. in the presence of a catalytic system formed of the reaction product of

(a) an organometallic compound of a metal of Group IIIA of the Mendeleev periodic table of elements having the formula $Me^1Me^3R^1R^2R^3R^4$ in which Me^1 represents an alkali metal, Me^3 represents aluminum or boron, R^1, R^2 and R^3 represent an alkyl or aralkyl radical and R^4 represents an alkyl or aralkyl radical or a radical XB in which X represents an oxygen, sulfur or nitrogen atom and B represents an alkyl or aralkyl radical; with

(b) at least one electron-donor compound containing at least one hetero-atom and formed of the reaction product of a protic polar compound with an alkali metal or with an alkaline earth metal.

4,148,986

POLYMERIZATION PROCESS

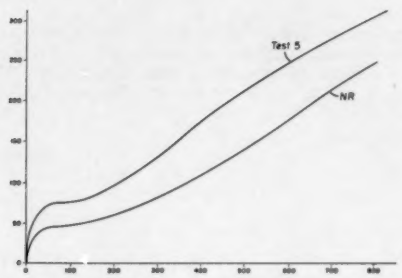
Yves DeZarauz, Le Cendre, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Division of Ser. No. 788,031, Apr. 15, 1977, Pat. No. 4,112,210, which is a continuation-in-part of Ser. No. 659,905, Feb. 20, 1976, abandoned. This application Apr. 29, 1977, Ser. No. 792,457

Claims priority, application France, Feb. 27, 1975, 75 06239

Int. Cl.[2] C08F *4/08, 4/10*

U.S. Cl. 526—177 **8 Claims**



1. A process of producing homopolymers of conjugated dienes or copolymers and conjugated dienes with other conjugated dienes or with vinyl aromatic compounds to form elastomeric products which comprises reacting the monomers at a temperature between 50° C. and 120° C. in the presence of a catalytic system formed of the reaction product of

(a) an organometallic compound of a metal of Group IIIA of the Mendeleev periodic table of elements having the formula $Me^2Me^3R^1R^2R^3R^4)_2$ in which Me^2 represents an alkaline earth metal, Me^3 represents aluminum or boron, R^1, R^2 and R^3 represent an alkyl or aralkyl radical and R^4 represents an alkyl or aralkyl radical or a radical XB in which X represents an oxygen, sulfur or nitrogen atom and B represents an alkyl or aralkyl radical; with

(b) at least one electron-donor compound containing at least one hetero-atom selected from the group consisting of aprotic polar compounds and protic polar compounds.

4,148,987

RADIATION-CURABLE MONOMERS AND POLYMERS THEREOF

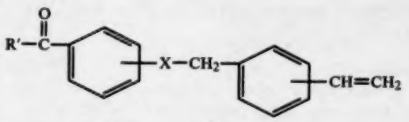
Donald A. Winey, Warminster, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed May 4, 1977, Ser. No. 793,656

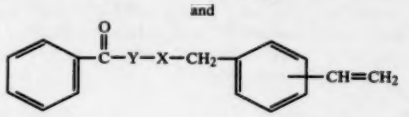
Int. Cl.[2] C07C *69/76*

U.S. Cl. 526—316 **10 Claims**

1. A monomer selected from the group consisting of those having one of the general formulas:


(I)

and


(II)

wherein

R′ is methyl or phenyl,

X is —C(O)O—, and

Y is a saturated or unsaturated aliphatic group

(a) of straight or branched chain having 1 to 3 carbon atoms, or

(b) of cyclic type having 3 to 6 carbon atoms.

5. A linear, essentially uncrosslinked addition polymer of a monomer according to claim 1.

7. A linear, essentially uncrosslinked addition copolymer of a monomer according to claim 1 with at least one other monoethylenically unsaturated monomer having a group of the formula $H_2C{=}C<$.

4,148,988

CURABLE COMPOSITION

Eiichi Masuhara, Tokyo; Nobuo Nakabayashi, Matusdo, and Morio Takeyama, Tokyo, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

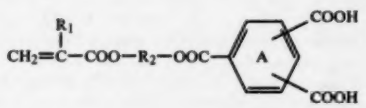
Filed Jun. 19, 1978, Ser. No. 916,851

Claims priority, application Japan, Jun. 28, 1977, 52-76190; Oct. 13, 1977, 52-121858

Int. Cl.[2] C08F *222/16*

U.S. Cl. 526—318 **11 Claims**

1. A curable composition comprising (A) an ethylenically unsaturated carboxylic acid represented by the following general formula:



wherein

R_1 is a hydrogen atom or a methyl group,

R_2 is an alkylene group having 2 to 4 carbon atoms, and in the benzene ring A, two carboxyl groups are bonded to carbon atoms other than the carbon atoms adjacent to the carbon atom to which the ester group is bonded,

or an acid anhydride thereof, (B) at least one ethylenically

unsaturated monomer other than said monomer (A), said ethylenically unsaturated monomer (B) being copolymerizable with said monomer (A), and (C) at least one catalyst selected from the group consisting of free radical initiators and photosensitizers.

11. A dental adhesive comprising a curable composition as set forth in claim 1.

4,148,989

CROSSLINKING POWDER LACQUERS OF POLYESTERS

Günter Tews; Helmut Wulff, and Gerhard Schade, all of Witten, Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf Bez. Koeln, Fed. Rep. of Germany

Filed Mar. 11, 1977, Ser. No. 776,580

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1976, 2611117

Int. Cl.[2] C08G *63/70, 63/76*

U.S. Cl. 528—177 **16 Claims**

1. A powder lacquer composition comprising a branched hydroxy group containing polyester resin which has a hydroxyl number between 50 and 150 mg KOH/g and which is solid at room temperature and 0.3 to 20 percent by weight of a crosslinking agent consisting essentially of a titanium chelate which is solid at room temperature.

4,148,990

CONTINUOUS REMOVAL OF MONOMERS FROM AN AQUEOUS DISPERSION OF A POLYMER

Bernhard Kuxdorf; Karl Kaiser, both of Brühl, and Rudolf Wesselmann, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 7, 1977, Ser. No. 831,156

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1976, 2640546

Int. Cl.[2] C08F *6/16, 6/24*

U.S. Cl. 528—500 **11 Claims**

1. A process for removing continuously vinyl chloride from an aqueous dispersion of polyvinyl chloride with a K-value of 62–71 said dispersion containing about 1 to 60 weight % of solid polyvinyl chloride particles with an average size of about 20 to 500 microns and about 5000 to 15,000 ppm of vinyl chloride which comprises

(A) preheating the aqueous dispersion to about 60 to 90° C. and introducing it continuously into the upper portion of a degassing column comprising a vertically elongated tubular shell provided with a plurality of substantially horizontally disposed apertured plates; said plates being vertically spaced within and attached to the inner surface of said shell; each of said plates being penetrated by at least one excentrically arranged conduit comprising a draining shaft in the upper portion thereof and a feed shaft in the lower portion below the penetrated plate; each plate is supported by a plurality of wedge mountings and is wedged therewith, said wedge mountings being fastened around the inner surface of said shell; a mall gap uniform in width over the periphery is left between each plate and said shell; and a surface portion of each apertured plate underneath each conduit is impermeable; the aqueous dispersion being introduced at a rate of approximately 5 to 35 m^3 per m^2 of plate area per hour;

(B) said aqueous dispersion being contacted countercurrently with steam at approximately 80° to 150° C., under a pressure of about 0.5 to 5 bars, and in a proportion of 30 to 100 kg of steam per m^3 of dispersion, for a mean period of about 1 to 30 minutes; removing at the column base aqueous dispersion containing 1 to 10 ppm vinyl chloride; and condensing a vapour mixture emerging at an upper level of the column, and recovering vinyl chloride and an aqueous phase therefrom.

4,148,991

METHOD OF COAGULATING POLYMER LATEX EMULSIONS

Richard H. Skidmore, Strafford, Pa., assignor to W BAR E, Marianna, Fla.

Continuation of Ser. No. 716,340, Aug. 20, 1976, abandoned, which is a division of Ser. No. 532,525, Dec. 13, 1974, Pat. No. 3,993,292. This application Feb. 13, 1978, Ser. No. 877,249

Int. Cl.[2] C08F *6/22*

U.S. Cl. 528—502 **3 Claims**

1. In a method of making a polymer within an extruder of the type having an upstream end and a downstream end and a plurality of rotating screw flights, the steps which comprise forming an aqueous polymer emulsion, continuously feeding the aqueous emulsion into an extruder, passing the emulsion through a high pressure region of the extruder to coagulate the emulsion, subjecting the coagulated emulsion to a pressure drop within the extruder whereby the screw flights run less than full thereby separating the polymer and the water of emulsion, extruding the polymer while creating back pressure in a manner to cause the separated water to run countercurrently with respect to the polymer, and removing the separated water from the extruder.

4,148,992

ALLYLIC METHYL-HYDROXYLATED NOVOBIOCINS

Oldrich K. Sebek, Kalamazoo, and Lester A. Dolak, Cooper Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

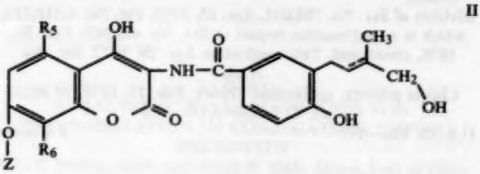
Division of Ser. No. 793,784, May 5, 1977. This application Feb. 15, 1978, Ser. No. 878,115

Int. Cl.[2] A61K *31/71;* C07H *17/06*

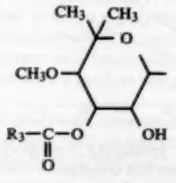
U.S. Cl. 536—13 **9 Claims**

1. A hydroxynovobiocin-type compound of the formula:

II



or pharmaceutically acceptable salt thereof, where R_5 and R_8 may be the same or different and are hydrogen, alkyl of 1 thru 5 carbon atoms, halogen, nitro, cyano, carboxyl or $—NR_\alpha R_\beta$ where R_α and R_β may be the same or different and are hydrogen or alkyl of 1 thru 5 carbon atoms; is a single or double bond and Z is



where R_9 is amino, 2-pyrryl, -2-(5-methyl)-pyrryl, 2-furyl, and 2-(5-methyl)-furyl.

4,148,993

PROCESS TO PRODUCE 1-METHYL ISOGUANOSINE

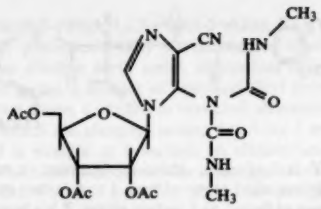
Alan F. Cook, Cedar Grove, N.J., and Ronald J. Quinn, Cromer, Australia, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 10, 1978, Ser. No. 876,768

Int. Cl.[2] C07H *17/00;* A61K *31/70*

U.S. Cl. 536—24 **2 Claims**

1. A compound of the formula



4,148,994

CRYSTALLINE METAL SALTS OF β-NICOTINAMIDE-ADENINE-DINUCLEOTIDE

Klaus Mühlegger, Weilheim; Günter Weimann, and Michael Nelboeck-Hochstetter, both of Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Dec. 27, 1976, Ser. No. 754,879

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1976, 2637598

Int. Cl.[2] C07H *17/00*; A61K *31/70*

U.S. Cl. 536—28 1 Claim

1. Orhtorhombic monolithium salt of beta-nicotinamide-adenine-dinucleotide hydrate with the following characteristics:

the space group $P2_1\,2_1\,2_1$,

the cell dimensions a=10.073±0.003 A, b=15.839±0.004 A, c=17.821±0.004 A, and the angles alpha=beta=gamma=90°.

4,148,995

PROCESS FOR PREPARING CEPHEM LACTONES FOR CEPHALOSPORIN-TYPE ANTIBIOTICS

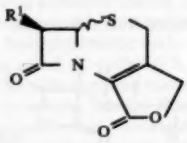
Theodor Petrzilka, Rigistrasse 6, Erlenbach, Switzerland; Gérard Schmid, Lugnorre, and Kapa K. Prasad, Basel, both of Switzerland, assignors to Theodor Petrzilka, Erlenbach, Switzerland

Filed Jul. 18, 1977, Ser. No. 816,716

Int. Cl.[2] C07D *501/02*

U.S. Cl. 544—15 17 Claims

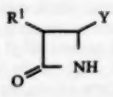
1. A process for preparing cephem lactones of the formula (1)



(1)

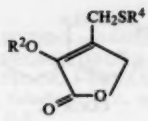
where R^1 is selected from the group consisting of hydrogen and organic radicals of the class of the 6-substituents of penicillins and the 7-substituents of cephalosporins; comprising the steps of

(I) condensing an azetidinone of the formula (2)



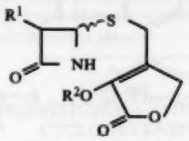
(2)

where Y is a leaving group, with a mercapto furanone of the formula (3)



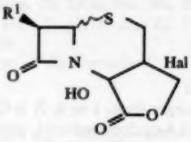
(3)

where R^2 and R^4 are each selected from the group consisting of hydrogen and protecting groups, to form a compound of the formula (4)



(4)

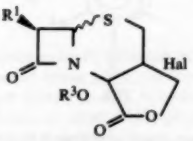
(II) reacting said compound of the formula (4) with a halogen to form a halohydrine of the formula (5)



(5)

where Hal is a halogen;

(III) reacting said compound of the formula (5) with an R^3-yielding agent, wherein R^3 is selected from the group consisting of acyl residues including from 1 to about 10 carbon atoms, aracyl residues including from 6 to about 18 carbon atoms, alkylsulfonyl residues in which the alkyl includes from 1 to about 10 carbon atoms; arylsulfonyl residues in which the aryl includes from 6 to about 18 carbon atoms, alkarylsulfonyl residues in which the alkaryl includes from 7 about 18 carbon atoms, and aralkylsulfonyl residues in which the aralkyl includes from 7 to about 18 carbon atoms, to form a compound of the formula(6)



(6)

(IV) and removing said halogen and said R^3O from said compound of the formula (6) by dehalogenating to produce said compound of the formula (1).

4,148,996

3,7-DISUBSTITUTED CEPHALOSPORINS

Giorgio Palamidessi; Franco Zarini; Giovanni Franceschi, all of Milan; Giovanna Schioppacassi, and Federico Arcamone, both of Nerviano, all of Italy, assignors to Societa Farmaceutici Italia S.p.A., Milan, Italy

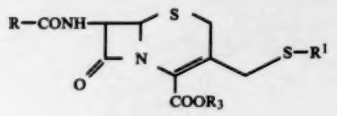
Filed May 16, 1977, Ser. No. 797,606

Claims priority, application United Kingdom, May 21, 1976, 21032/76

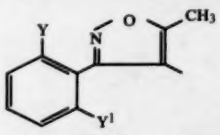
Int. Cl.[2] C07D *501/36*

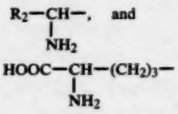
U.S. Cl. 544—26 14 Claims

1. A 7-acylamino-3-(substituted-pyrazinylthiomethyl)-3-cephem-4-carboxylic acid having the formula:



wherein R is an alkyl having from 1 to 5 carbon atoms or



R_2-CH_2-, $R_2-X-(CH_2)_n-$,  and

wherein

Y=Y¹=H

Y=Y¹=Cl

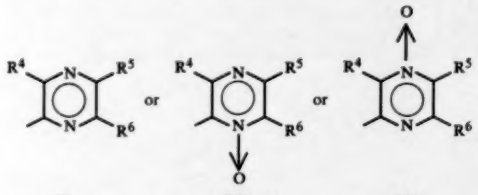
Y=Cl, Y¹=F

Y=H, Y¹=Cl, and

in which n is an integer from 1 to 4, X is O or S, and R_2 is thienyl, phenyl, 1,4-cyclohexadienyl, phenoxy, pyrazinyl and substituted phenyl, thienyl, pyrazinyl and phenoxy, the substituted being selected from the group consisting of hydroxy, chlorine, bromine and alkyl and alkoxy having from 1 to 4 carbon atoms;

R_3 is alkali metal such as sodium or potassium, hydrogen, alkyl having from 1 to 4 carbon atoms, benzyl, trichloroethyl, methoxybenzyl, benzhydryl, pivaloyloxymethyl, and an alkaline earth metal;

and R^1 is a pyrazinyl of the formula:



(II) (III) (IV)

in which R^4, R^5, R^6 are equal or different and are selected from the group consisting of F, Cl, Br, hydrogen, alkyl, phenyl, cyano, thiocyano, carboxyl, carboxyalkyl, carboxamido, thiocarboxamido, hydroxy, alkoxy, thiol, alkylthio, amino, alkylamino and phenylamino, the alkyls having from 1 to 4 carbon atoms, and wherein not more than two of R^4, R^5 and R^6 are hydrogen.

4,148,997

7-[SULFOMETHYL)PHENYL]ACETAMIDOCEPHALOSPORIN DERIVATIVES

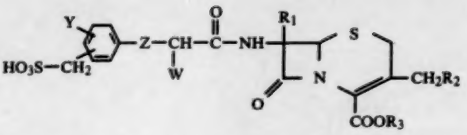
Fortuna Haviv, Wheeling, Ill., and Abraham Patchornik, Ness Ziona, Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed Nov. 7, 1977, Ser. No. 849,231

Int. Cl.² C07D *501/36*

U.S. Cl. 544—26 **7 Claims**

1. A compound of the formula



wherein Y is hydrogen, chlorine, bromine, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, or an alkoxy group of from 1 to 4 carbon atoms; Z is a bond, oxygen, or sulfur; W is hydrogen, methyl, amino, hydroxy, SO_3H or $COOR_4$ wherein R_4 is hydrogen or 5-indanyl with the proviso that when Z is oxygen or sulfur, W is other than hydroxy; R_1 is hydrogen or methoxy; R_2 is hydrogen, acetoxy, 1,3,4-thiadiazol-2-ylthio, 5-methyl-1,3,4-thiadiazol-2-ylthio, tetrazol-5-ylthio, 1-methyltetrazol-5-ylthio, 1,3,4-oxadiazol-2-ylthio, 5-methyl-1,3,4-oxadiazol-2-ylthio, 1,3,4-triazol-2-ylthio, 5-methyl-1,3,4-triazol-2-ylthio, 1,2,3-triazol-5-ylthio, pyridinium or 4-aminocarbonylpyridinium; R_3 is hydrogen, a negative charge when R_2 is pyridinium or 4-aminocarbonylpyridinium, a cation of an alkali metal or an alkaline earth metal, ammonium or organic ammonium cations, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, a straight or branched alkanoyloxymethyl group in which the alkanoyl moiety has from 2 to 5 carbon atoms and is straight or branched, an alkanoylaminomethyl group in which the alkanoyl moiety is straight or branched and has from 1 to 4 carbon atoms and the amine nitrogen may be substituted with a straight or branched lower alkyl group having 1 to 4 carbon atoms, an alkoxycarbonylaminomethyl group in which the alkoxy moiety is straight or branched and has from 1 to 4 carbon atoms and the amine nitrogen may be substituted with a straight or branched lower alkyl group of from 1 to 4 carbon atoms, a p-(alkanoyloxy)benzyl group in which the alkanoyl moiety is straight or branched and has from 1 to 4 carbon atoms, an aminoalkanoyloxymethyl group in which the alkanoyl moiety has from 2 to 15 carbon atoms and the amino nitrogen may be mono- or di-substituted with a straight or branched lower alkyl group having from 1 to 4 carbon atoms; and pharmaceutically acceptable salts and individual optical isomers thereof.

4,148,998

PYRROLE CEPHALOSPORIN DERIVATIVES

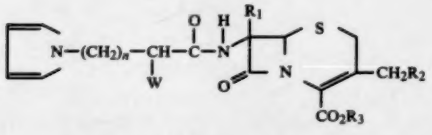
Abraham Nudelman, Rehovot, and Abraham Patchornik, Ness Ziona, both of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed Oct. 4, 1977, Ser. No. 839,163

Int. Cl.² C07D *501/36*

U.S. Cl. 544—27 **17 Claims**

1. A compound selected from the base of the formula



wherein n is 0, 1, 2 or 3; W is hydrogen, a straight or branched alkyl group of from 1 to 5 carbon atoms; a sulfonic acid group, or a $-(CH_2)_z-CO_2R_4$ group wherein Z is 0 or an integer from 1 to 10 and R_4 is hydrogen, non-toxic pharmaceutically acceptable cation selected from the alkali metal or alkaline earth metal groups, ammonium and an organic ammonium group, a straight or branched 1 to 4 carbon alkyl group, a straight or branched alkanoyloxymethyl group in which the alkanoyl moiety has from 2 to 5 carbon atoms; R_1 is hydrogen or methoxy; R_2 is 1,3,4-thiadiazol-2-ylthio; 5-methyl-1,3,4-thiadiazol-2-ylthio; tetrazol-5-ylthio; 1-methyltetrazol-5-ylthio; 1,3,4-oxadiozol-2-ylthio; 5-methyl-1,3,4-oxadiozol-2-ylthio; 1-meth-

yl-1,2,3-triazol-5-ylthio; 1,2,3-triazol-5-ylthio; R_3 is hydrogen, a non-toxic pharmaceutically acceptable cation of an alkali metal or an alkaline earth metal, ammonium or an organic ammonium group, a straight or branched alkyl group of from 1 to 4 carbon atoms, a straight or branched alkanoyloxymethyl group in which the alkanoyl moiety has from 2 to 5 carbon atoms and is straight or branched, an alkanoylaminomethyl group in which the alkanoyl moiety is straight or branched and has from 2 to 5 carbon atoms and the amine nitrogen may be substituted with a straight or branched alkyl group having 1 to 4 carbon atoms; an alkoxycarbonylaminomethyl group in which the alkoxy moiety is straight or branched and has from 1 to 4 carbon atoms and the amine nitrogen may be substituted with a straight or branched alkyl group of from 1 to 4 carbon atoms, p-(alkanoyloxy)benzyl group in which the alkanoyl moiety is straight or branched and has from 2 to 5 carbon atoms; an aminoalkanoyloxymethyl group in which the alkanoyl moiety has from 2 to 15 carbon atoms and the amino nitrogen may be mono- or di-substituted with a straight or branched alkyl group having from 1 to 4 carbon atoms; with the proviso that when n is 0, W must be an alkyl group, a sulfonic acid group of a $-(CH_2)_z-CO_2R_4$ group with R_4 as defined above; and with the further proviso that when R_3 is other than hydrogen or a cation and W is $-(CH_2)_z-CO_2R_4$ with z being from 1 to 10 then R_4 is other than hydrogen or a cation, and pharmaceutically acceptable salts thereof.

4,148,999

PREPARATION AND PURIFICATION OF CITROVORUM FACTOR

Carroll G. Temple, Jr.; Robert D. Elliott; Jerry D. Rose, and John A. Montgomery, all of Birmingham, Ala., assignors to The Government of the United States of America, Washington, D.C.

Filed Aug. 22, 1977, Ser. No. 826,677
Int. Cl.[2] C07D 475/04
U.S. Cl. 544—258 **4 Claims**

1. A method for producing citrovorum factor from folic acid comprising the steps of:
   (a) formylating folic acid with formic acid to convert said folic acid to 10-formylfolic acid;
   (b) recovering said 10-formylfolic acid from the formylation reaction mixture;
   (c) hydrogenating said 10-formylfolic acid in trifluoroacetic acid containing a catalytic amount of prereduced platinum dioxide to convert said 10-formylfolic acid to 5, 10-methenyl-5, 6, 7, 8-tetrahydrofolic acid;
   (d) recovering said 5, 10-methenyl-5, 6, 7, 8-tetrahydrofolic acid from the hydrogenation reaction mixture; and
   (e) refluxing an aqueous solution of said 5, 10-methenyl-5, 6, 7, 8-tetrahydrofolic acid maintained at a pH of from 6.2 to 7.0 to open the imidazoline ring thereof and thereby convert it to citrovorum factor.

3. A method for producing citrovorum factor from folic acid comprising the steps of:
   (a) reducing folic acid in aqueous solution with sodium borohydride to convert said folic acid to tetrahydrofolic acid;
   (b) formylating said tetrahydrofolic acid in aqueous solution with formic acid to convert said tetrahydrofolic acid to 5, 10-methenyl-5, 6, 7, 8-tetrahydrofolic acid;
   (c) recovering said 5, 10-methenyl-5, 6, 7, 8-tetrahydrofolic acid from the formylation reaction mixture; and
   (d) refluxing an aqueous solution of said 5, 10-methenyl-5, 6, 7, 8-tetrahydrofolic acid maintained at a pH of from 6.2 to 7.0 to open the imidazoline ring thereof and thereby convert it to citrovorum factor.

4,149,000

1,2,3,4,5,6-HEXAHYDRO-3-(3-METHYL-2-BUTENYL)-6-METHYL-11(EQ)-HYDROXY-11-METHYL-2,6-METHANO-3-BENZAZOCINE

Noel F. Albertson, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 444,487, Feb. 21, 1974, Pat. No. 4,009,171. This application Mar. 6, 1975, Ser. No. 555,932
Int. Cl.[2] C07D 221/26
U.S. Cl. 546—97 **1 Claim**

1. 1,2,3,4,5,6-Hexahydro-3-(3-methyl-2-butenyl)-6-methyl-8-hydroxy-11(eq)-hydroxy-11-methyl-2,6-methano-3-benzazocine or an acid-addition salt thereof.

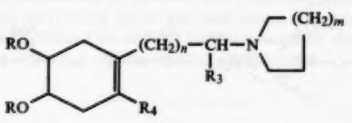
4,149,001

4,5-DISUBSTITUTED-1-AMINOALKYL CYCLOHEXENES

Joseph E. Sundeen, Yardley, Pa., and Frederic P. Hauck, Somerville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

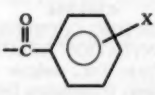
Division of Ser. No. 790,784, Apr. 25, 1977. This application Aug. 18, 1978, Ser. No. 934,937
Int. Cl.[2] C07D 211/22, 211/34
U.S. Cl. 546—238 **9 Claims**

1. A compound of the formula:



including its sterioisomers wherein R is hydrogen,

lower alkyl, or



R_3 and R_4 are independently selected from the group consisting of hydrogen and lower alkyl; n is 0 or an integer from 1 to 3; m is an integer from 1 to 3; X is hydrogen, halogen, lower alkyl, lower alkoxy, or nitro; and a pharmaceutically acceptable acid addition salt thereof.

4,149,002

PROCESS FOR THE PRODUCTION OF 2-METHYL PYRIDINE AND 3-METHYL PYRIDINE

Helmut Beschke, and Heinz Friedrich, both of Hanau, Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Jan. 24, 1978, Ser. No. 871,978
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 2703069
Int. Cl.[2] C07D 213/12
U.S. Cl. 546—251 **19 Claims**

1. In a process for the production of 2-methyl pyridine and 3-methyl pyridine by the catalytic reaction of acrolein and acetone with ammonia in the gas phase the improvement comprising employing as the catalyst a highly dispersed aluminum silicate containing 3 to 30 weight percent aluminum oxide, a BET surface area of 200 to 800 m^2/g, a pore volume of 0.4 to 1.0 cm^3/g and a pore diameter of 20 to 100×10^{-8} cm and

wherein the catalyst is employed in a fluidized bed and the acrolein and acetone are introduced into the reactor separately from the ammonia.

4,149,003

PYRIDINE DISULFIDE COMPOUNDS

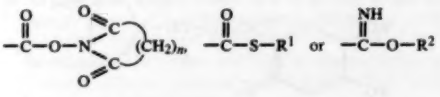
Jan P. E. Carlsson, Upsala; Rolf E. A. V. Axén, Balinge; Håkan N. Y. Drevin, Brunna, and Göran E. S. Lindgren, Almunge, all of Sweden, assignors to Pharmacia Fine Chemicals AB, Upsala, Sweden

Filed Mar. 2, 1978, Ser. No. 882,546
Claims priority, application Sweden, Mar. 4, 1977, 7702462
Int. Cl.² C07D *213/70, 401/12*
U.S. Cl. 546—261 **3 Claims**

1. Pyridine compounds, characterized in that they have the formulae

$$R^1—S—S—A—Z \qquad (I)$$

where R^1 is 2-pyridyl, 5-nitro-2-pyridyl or 4-pyridyl, A is a hydrocarbon residue having 1–10 carbon atoms, preferably 1–6 carbon atoms, and Z is a group



or acid adddition salts of the last mentioned group, where n is 2 or 3, R^1 has the same significance as R^1 above and is equal thereto, and R^2 is methyl or ethyl.

4,149,004

METHOD OF INHIBITING CUPRENE FORMATION IN ETHYNYLATION REACTION

Albert M. Stock, LaPorte, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 814,433, Jul. 11, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,801
Int. Cl.² C07C *29/00*
U.S. Cl. 568—855 **5 Claims**

1. In the continuous aqueous reaction of formaldehyde and acetylene to form 1,4-butynediol, run at a pH of 6–8 and using a copper acetylide complex as the catalyst, a method of inhibiting cuprene formation when the acetylene flow to the reaction mass is interrupted, the method comprising maintaining the reaction mass at a pH of about 3.5–5 until the normal flow of acetylene is resumed.

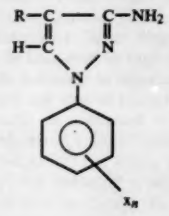
4,149,005

PROCESS FOR PREPARING 1-PHENYL-3-AMINOPYRAZOLES

Ruggero Battisti; Luigi Cassar, and Nicola Mazzaferro, all of Novara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jun. 24, 1977, Ser. No. 809,849
Claims priority, application Italy, Jun. 25, 1976, 24718 A/76
Int. Cl.² C07D *231/38*
U.S. Cl. 548—362 **5 Claims**

1. Process for preparing a phenyl-3-aminopyrazole having the formula:



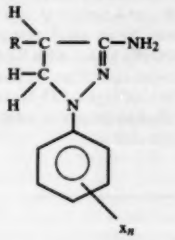
(I)

in which

R is H or CH_3;

X is H, Br, Cl, CF_3 or an alkyl, alkoxyl or carboxyl alkyl group having from 1 to 4 carbon atoms and

n is 1 or 2, which process consists in oxidizing a 1-phenyl-3-amino-2-pyrazoline of the formula:



(II)

in which R, X and n have the same meaning as in formula (I), in an atmosphere of oxygen and/or air, in the presence of at least a copper salt as catalyst and in a total amount of at least 5% by weight expressed as moles of metal Cu in respect of the moles of 1-phenyl-3-amino-2-pyrazoline introduced, in an inert reaction medium, and at a temperature of from about 20° C. to about 40° C.

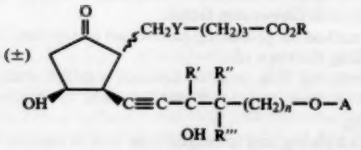
4,149,006

PROSTAGLANDIN DERIVATIVES HAVING ALKYNYL, HYDROXY AND ARYLOXY JUNCTIONS IN THE 2β SIDE CHAIN

Paul W. Collins, Deerfield, and Raphael Pappo, Skokie, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Jan. 24, 1977, Ser. No. 761,567
Int. Cl.² C07C *177/00*
U.S. Cl. 560—53 **5 Claims**

1. A compound of the formula



wherein n is 0 or 1, Y represents ethylene or vinylene; R represents hydrogen or lower alkyl having 1–7 carbon atoms; R′, R″, R‴ each independently represent hydrogen or methyl; Ar represents phenyl, halosubstituted phenyl, alkyl substituted phenyl wherein the alkyl contains 1–4 carbon atoms, alkoxy substituted phenyl wherein the alkoxy contains 1–4 carbon atoms, trifluoromethylphenyl or biphenyl.

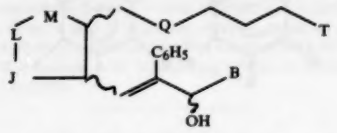
4,149,007

C_{14} PHENYL-SUBSTITUTED DERIVATIVES OF PROSTAGLANDIN ANALOGUES

Robert T. Buckler, Edwardsburg, Mich., and David L. Garling, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jun. 24, 1977, Ser. No. 809,786
Int. Cl.[2] C07C 177/00
U.S. Cl. 560—53 34 Claims

1. A compound having the formula



wherein:

J is selected from the group consisting of methylene, R-hydroxymethylene, S-hydroxymethylene and methine;

L is selected from the group consisting of methylene and methine with the proviso that L is methine only when J is methine;

M is selected from the group consisting of carbonyl, R-hydroxymethylene and S-hydroxymethylene;

Q is selected from the group consisting of ethylene, Z-vinylene and inter-phenylene;

T is selected from the group consisting of alkoxycarbonyl having from 2 to 3 carbon atoms inclusive, carboxyl and pharmacologically acceptable non-toxic salts; and

B is a loweralkyl having from 1 to 5 carbon atoms.

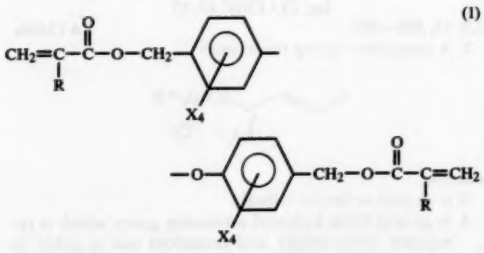
4,149,008

HALOGEN-CONTAINING UNSATURATED BIS-ESTERS

Egon N. Petersen, Neukirchen-Seelscheid; Norbert Vollkommer, Troisdorf; Georg Blumenfeld, St. Augustin; Hermann Richtzenhain, Much-Schwellenbach, and Wilhelm Vogt, Cologne, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Mar. 23, 1977, Ser. No. 780,577
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2612843
Int. Cl.[2] C07C 69/54
U.S. Cl. 560—221 6 Claims

1. A bis-acrylic or a bis-methyacrylic ester corresponding to the formula



(1)

in which R represents hydrogen or a methyl group and of the 8 X substituents 7 X to 8 X representing chlorine or bromine and up to 1 X being hydrogen.

4,149,009

PROCESS FOR PRODUCING METHYL FORMATE

Mikio Yoneoka, and Minoru Osugi, both of Niigata, Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Nov. 21, 1977, Ser. No. 853,234
Claims priority, application Japan, Dec. 2, 1976, 51-144899
Int. Cl.[2] C07C 67/40
U.S. Cl. 560—239 13 Claims

1. A process for producing methyl formate, characterized by dehydrogenating methanol in vapor phase in the presence of a catalyst consisting essentially of copper, zirconium and zinc.

4,149,010

SYNTHESIS OF α-TRIFLUOROMETHYL VINYL ACETATE

Edward P. Lindholm, Somerville, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 30, 1977, Ser. No. 811,718
Int. Cl.[2] C07C 67/00, 67/14, 69/145
U.S. Cl. 560—262 15 Claims

1. A process which comprises reacting, at a temperature from about 15° C. to about 50° C., 1,1,1-trifluoroacetone with an acetylating agent in the presence of an amine selected from the group consisting of pyridine and p-dimethylamino pyridine, said acetylating agent and said amine being in molar excess with respect to said 1,1,1-trifluoroacetone, for a time sufficient to form α-trifluoromethyl vinyl acetate.

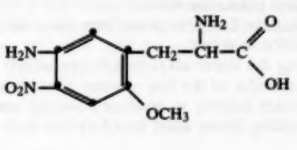
4,149,011

NOVEL SUBSTITUTED ALANINES

Chandravadan N. Talaty, Athens, Ga.; Jeremy Wright, Baltimore, and Nicolas Zenker, Lutherville, both of Md., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 769,802, Feb. 17, 1977, Pat. No. 4,070,478.
This application Aug. 8, 1977, Ser. No. 822,485
Int. Cl.[2] C07C 63/52
U.S. Cl. 562—434 1 Claim

1. A compound having the formula



4,149,012

SYNTHESIS OF RACEMIC 3-FLUORO-ALANINE AND ITS SALTS

Ulf-H. Dolling; Edward J. J. Grabowski, both of Westfield; Erwin F. Schoenewaldt, Watchung, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 664,329, Mar. 5, 1976, abandoned, which is a continuation of Ser. No. 522,184, Nov. 8, 1974, abandoned. This application Oct. 7, 1977, Ser. No. 840,335
Int. Cl.[2] C07C 99/00
U.S. Cl. 562—574 3 Claims

1. The process which comprises reacting an alkali metal or alkaline earth metal salt of 3-fluoropyruvic acid or hydrate thereof, with aqueous ammonium hydroxide until substantially converted to a salt of 2,2-diamino-3-fluoropropionic acid, and reacting the latter with an alkali metal borohydride to produce a salt of 3-fluoro-DL-alanine.

4,149,013

PROCESS FOR PURIFYING 1,12-DODECANEDIOIC ACID

David A. Klein, Wilmington, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 19, 1978, Ser. No. 907,824
Int. Cl.[2] C07C 51/42
U.S. Cl. 562—593 5 Claims

1. A method for purifying crude 1,12-dodecanedioic acid produced by a process that includes an iron-reductive-coupling step and contains color-forming impurities including iron, comprising

forming a solution at a temperature of 70° to 125° C. comprising dissolved crude 1,12-dodecanedioic acid, water, acetic acid, phosphoric acid and a compound containing peroxidic oxygen;

separating insoluble material from said solution;

cooling the solution to a temperature in the range of 5° to 65° C. to recrystallize the 1,12-dodecanedioic acid;

washing the recrystallized 1,12-dodecanedioic acid at a temperature between 10° and 50° C., with aqueous acetic acid and then with water; and

recovering the thus treated 1,12-dodecanedioic acid.

4,149,014

PROCESS FOR THE PREPARATION OF BIS-(β-CARBOXYETHYL)ALKYL PHOSPHINE OXIDES FROM TRIS-CYANOETHYL PHOSPHINE

Glenn R. Wilson, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 23, 1977, Ser. No. 780,563
Int. Cl.[2] C07F 9/53
U.S. Cl. 562—594 9 Claims

1. Process for the preparation of lower alkyl bis-(β-carboxyethyl) phosphine oxide from tris-cyanoethyl phosphine comprising sequentially:

(a) preparing a lower alkyl phosphonium salt of tris-cyanoethyl phosphine by alkylating tris-cyanoethyl phosphine with a lower alkyl sulfate;

(b) dequaternizing the phosphonium salt of tris-cyanoethyl phosphine with methanolic potassium hydroxide to produce a first reaction mixture including lower alkyl bis-(β-cyanoethyl) phosphine and a first precipitate being a lower alkyl potassium sulfate;

(c) separating the first precipitate from the remainder of the first reaction mixture;

(d) oxidizing the lower alkyl bis-(β-cyanoethyl) phosphine in the remainder of the first reaction mixture with hydrogen peroxide thereby to produce a second reaction mixture including lower alkyl bis-(β-cyanoethyl) phosphine oxide;

(e) hydrolyzing the lower alkyl bis-(β-cyanoethyl) phosphine oxide with a surplus of calcium hydroxide in the presence of the second reaction mixture thereby to produce a calcium salt of lower alkyl bis-(β-carboxyethyl) phosphine oxide and ammonia in a third reaction mixture;

(f) acidifying the third reaction mixture with sulfuric acid thereby to produce lower alkyl bis-(β-carboxyethyl) phosphine oxide in a fourth reaction mixture including a second precipitate being insoluble calcium sulfate; and

(g) separating the lower alkyl bis-(β-carboxyethyl) phosphine oxide from the second precipitate.

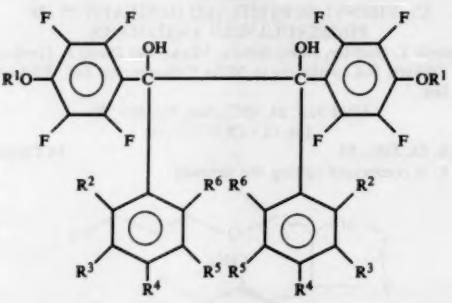
4,149,015

SUBSTITUTED BENZOPINACOLS

Jonas Dedinas, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 799,798, May 23, 1977, abandoned. This application Feb. 13, 1978, Ser. No. 877,194
Int. Cl.[2] C07C 39/12, 43/20
U.S. Cl. 568—637 4 Claims

1. A compound represented by the formula:



wherein

R^1 is hydrogen, alkyl containing 1 to 16 carbon atoms or aryl containing up to 12 carbon atoms;

R^2 and R^6 independently are selected from the group consisting of hydrogen, halogen or trifluoromethyl;

R^3 and R^5 independently are selected from the group consisting of hydrogen, halogen and alkyl containing 1 to 16 carbon atoms or, when taken together with R^4, represent a tetramethylene group; and

R^4 is selected from the group consisting of hydrogen, halogen, alkyl containing 1 to 16 carbon atoms, alkoxy containing 1 to 16 carbon atoms and phenoxy;

and when both of the ortho positions of the phenyl groups to which R^2 and R^6 are attached are substituted, the substituent is fluorine.

4,149,016

PERFLUOROETHERS

Madeline S. Toy, Palo Alto, and Roger S. Stringham, Woodside, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 771,853, Feb. 23, 1977, Pat. No. 4,077,857. This application Nov. 16, 1977, Ser. No. 852,114
Int. Cl.[2] C07C 43/18
U.S. Cl. 568—664 2 Claims

1. As a compound, 2,2'-perfluorodi(methoxycyclopentyl).

2. As a compound, 2,2'-perfluorodi(methoxycyclohexyl.

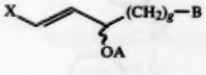
4,149,017

INTERMEDIATES FOR THE PREPARATION OF BICYCLOALKYL DERIVATIVES OF PROSTAGLANDINS

Warren D. Woessner; Charles J. Sih; Harold C. Kluender; Henry C. Arndt, and William G. Biddlecom, all of Madison, Wis., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 657,221, Feb. 11, 1976, Pat. No. 4,074,063. This application Jul. 25, 1977, Ser. No. 818,995
Int. Cl.[2] C07C 43/30
U.S. Cl. 568—665 6 Claims

1. A compound having the formula



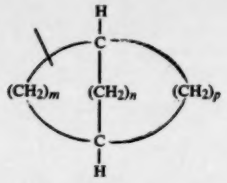
wherein:

X is an iodo or bromo radical;

A is an acid-labile hydroxyl protecting group which is removable under mildly acid conditions and is stable to alkyllithium and alkylcopper (I) reagents;

g is an inter having a value of from 0 to 10; and

B is selected from the class of bicycloalkyl radicals of the formula



where m and p are integers having a value of from 1 to 4; n is an integer having a value of from 0 to 4 such that the sum of m, n and p is greater than or equal to 3 and the point of attachment of the alkyl chain $(CH_2)_g$ to the bicycloalkyl radical is in the $(CH_2)_m$ bridge or in the bridgehead position.

4,149,018

COMPOUND $CHCl_2$-O-CHF-CF_3

William Bell; Keith Pearson, and Richard W. Rendell, all of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 747,996, Dec. 6, 1976, abandoned. This application Feb. 6, 1978, Ser. No. 875,546

Claims priority, application United Kingdom, Dec. 5, 1975, 50040/75

Int. Cl.[2] C07C *43/12, 43/02;* A61K *31/075*

U.S. Cl. 568—684 **1 Claim**

1. The compound $CHCl_2$—O—CHF—CF_3.

4,149,019

PROCESS FOR THE TRANSALKYLATION OF NUCLEAR METHYLATED PHENOLS

Arnold Alscher, Krefeld; Heinrich Steinke, Castrop-Rauxel; Gerd Collin, Duisburg, and Günter Storch, Castrop-Rauxel, all of Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 4, 1977, Ser. No. 839,484

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1976, 2545770

Int. Cl.[2] C07C *37/12*

U.S. Cl. 568—804 **4 Claims**

1. A process for the translakylation of nuclear methylated phenols into o-cresol in the liquid phase which comprises subjecting 2,6-dimethylphenol or a mixture of nuclear methylated phenols obtained as a residue in an o-cresol synthesis to conversion in the absence of catalysts and in the presence of from 5% to 65% by weight of phenol based on the weight of the nuclear methylated phenols at a temperature of from 380° to 490° C. and at a pressure of from 40 to 100 bar.

4,149,020

INTERMEDIATE FOR PREPARATION OF 2,3-DIMETHYL-5-(2,2,3-TRIMETHYL-3-CYCLOPENTEN-1-YL)-2-PENTANOL

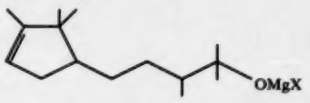
Venkatesh Kamath, Red Bank; Braja D. Mookherjee, and Frederick L. Schmitt, both of Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Apr. 5, 1978, Ser. No. 893,542

Int. Cl.[2] C07C *33/02, 33/05*

U.S. Cl. 568—838 **2 Claims**

1. A compound having the structure:



wherein X is selected from the group consisting of iodo, chloro and bromo.

4,149,021

ESTER HYDROGENATION USING COBALT, ZINC AND COPPER OXIDE CATALYST

Robert G. Wall, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 790,366, Apr. 25, 1977, Pat. No. 4,113,662, which is a continuation-in-part of Ser. No. 711,909, Aug. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 578,799, May 19, 1975, abandoned. This application Apr. 24, 1978, Ser. No. 899,759

Int. Cl.[2] C07C *29/00*

U.S. Cl. 568—864 **10 Claims**

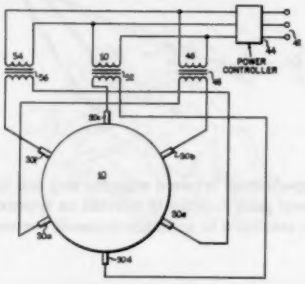
1. A process of hydrogenation of carboxylic acid esters to alcohols which comprises contacting the ester with hydrogen gas and a catalyst the metals of which are not fused and consisting essentially of the elemental oxide of cobalt, zinc and copper under catalytic hydrogenation conditions including a temperature between 150° and 450° C. and pressures of 500–10,000 psig.

4,149,022

POWER CONTROL SYSTEM FOR ELECTRICALLY MELTING GLASS

Kenneth S. Hrycik, Eastlake, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed May 1, 1978, Ser. No. 901,318
Int. Cl.[2] C03B 5/02
U.S. Cl. 13—6 32 Claims



1. A control system for operating a glass melting furnace having a vertically oriented melting chamber to feed glass batch at the top level of said chamber and withdraw molten glass at the bottom level of the melting chambers which comprises:

(a) a set of electrodes located adjacent said top level in the melting chamber and connected to a first power supply means,

(b) a set of electrodes located at the bottom level in the melting chamber and connected to a second power supply means,

(c) a set to electrodes located at a level in the melting chamber intermediate said bottom and top level electrodes and connected to a third power supply means, and

(d) control means for applying electrical power to the top and intermediate level electrodes so that when power is increased to the intermediate level electrodes there is a decrease in power applied to the top level electrodes while a constant power ratio is maintained between the intermediate and bottom level electrodes.

4,149,023

METHOD FOR RECLAIMING A USED ACTIVE CARBON

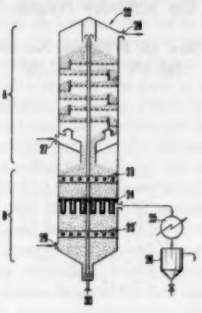
Toshio Mizuno, and Heiichiro Murakami, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 758,839, Jan. 12, 1977, which is a continuation-in-part of Ser. No. 678,959, Apr. 21, 1976, abandoned. This application Apr. 19, 1978, Ser. No. 897,864
Claims priority, application Japan, Apr. 21, 1975, 50-48301
Int. Cl.[2] F27B 1/08; F27D 11/04; H05B 3/60
U.S. Cl. 13—7 3 Claims

1. Adsorption apparatus comprising: a vertical column, and at least two vertically spaced electrodes mounted within said column, said electrodes being provided with a plurality of openings large enough to allow passage of adsorbent particles therethrough and having a total area at least 25% of the total surface area of said electrodes, said electrodes bridging the vertical walls of said column so that substantially all particles entering from the top must pass through the electrodes;

an adsorber including means for forming a plurality of fluidized beds of the particulate adsorbent;

means for continuously transferring the used particulate adsorbent exiting the adsorber onto the top of the upper electrode for regeneration;



means for continuously transferring the regenerated particulate adsorbent from the bottom of the vertical column to the adsorber

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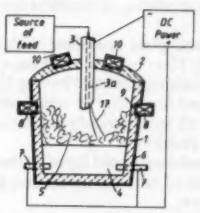
4,149,024

ARC FURNACE FOR REDUCING METAL OXIDES AND METHOD FOR OPERATING SUCH A FURNACE

Sven-Einar Stenkvist, and Björn Widell, both of Vesteras, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Continuation-in-part of Ser. No. 594,733, Jul. 10, 1975. This application Mar. 11, 1977, Ser. No. 776,868
Claims priority, application Sweden, Jul. 23, 1974, 7409556
Int. Cl.[2] H05B 7/20
U.S. Cl. 13—11 4 Claims

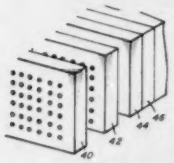


1. A DC arc furnace comprising a vessel adapted to contain a melt in its lower portion and having an outer metal shell and an inner lining, a substantially vertical consumable arcing electrode having an axially extending internal feeding passage through which particles can be fed to said melt, said arcing electrode having a feeding tip positioned above said melt, at least one melt contact electrode for applying DC arcing power through said melt so as to form an arc between the melt and said tip, said melt contact electrode being horizontally offset from alignment with said arcing electrode so as to cause said arc to form as an angular arc which angles in a downward direction away from alignment with said arcing electrode and towards said lining, and electromagnets above the level of said melt in openings formed in said metal shell, said electromagnets partially extending through the shell and into said lining to positions spaced outwardly from the lining's inside, said electromagnets being arranged so that when supplied with AC they form a rotating magnetic field within said vessel forcing said angular arc to rotate around the axis of said arcing electrode rotatively with respect to said lining.

4,149,025
METHOD OF FABRICATING THERMOELECTRIC POWER GENERATOR MODULES

Vasile Niculescu, 35B Ridgeview Heights, West Wellington, Conn. 06279

Filed Nov. 16, 1977, Ser. No. 851,929
Int. Cl.[2] H01L 35/02
U.S. Cl. 136—206 10 Claims



1. A method of fabricating thermoelectric power generator modules, each having an array of semiconductor elements tightly supported in a thin supporting matrix plate formed of electrically and thermally insulating material, the method comprising:

a. providing said electrically and thermally insulating material of said plate in solid form;

b. tightly supporting an array of longitudinally elongated n- and p-type semiconductor elements in a thick solid supporting matrix of said electrically and thermally insulating material of said plates;

c. slicing said thick supporting matrix in a direction transverse to the longitudinal axis of the semiconductor elements to form a plurality of thin matrix plates, said matrix plates each supporting an array of n- and p-type semiconductor elements; and,

d. applying a pattern of electrically conductive pads on opposite surfaces of said matrix plates to electrically connect n- and p-type semiconductor elements in series to form a thermoelectric power generator.

9. A modular unit for converting solar energy into electrical power and heat, comprising, in combination:

a. a frame;

b. a thermoelectric plate contained within said frame, said thermoelectric plate being coated on a first side with an electrically insulating material having high solar radiation absorptivity and low infrared emissivity and coated on a second side with an electrically insulating material having high infrared emissivity;

c. means for circulating a cold liquid in thermal contact with the second side of said thermoelectric plate;

d. a bottom cover;

e. a transparent top cover;

f. electrical contacts on the outside of said frame; and,

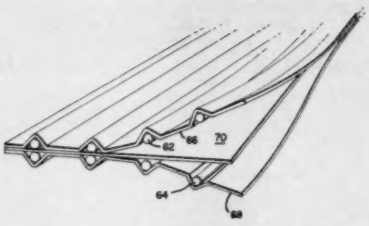
g. means for electrically connecting the electrical contacts on the outside of said frame to the thermoelectric plate within said frame.

4,149,026
MULTI-PAIR CABLE HAVING LOW CROSSTALK

William B. Fritz, and John R. Hopkins, both of Hershey, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 612,887, Sep. 12, 1975, abandoned. This application May 13, 1976, Ser. No. 685,828
Int. Cl.[2] H01B 7/08
U.S. Cl. 174—32 22 Claims

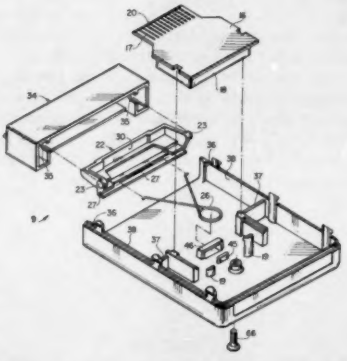
1. In a cable construction for a balanced electrical load including multiple pairs of conductors assigned ring and tip functions, a first array of ring conductors essentially equally spaced apart in essentially a plane, a second array of tip conductors essentially equally spaced apart in essentially a plane, means fixedly positioning the said ring and tip conductors forming a given ring and tip pair essentially parallel to each other and a distance apart from each other such that the product of the capacitances between adjacent ring and between adjacent tip conductors of adjacent pairs approaches the product of the capacitances between adjacent ring and tip conductors of adjacent pairs in order to provide an approximate balanced bridge condition to minimize crosstalk between pairs.



4,149,027
TV GAME CARTRIDGE AND METHOD

James C. Asher, San Jose, and Douglas A. Hardy, Portola Valley, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Filed May 27, 1977, Ser. No. 801,240
Int. Cl.[2] H05K 5/00
U.S. Cl. 174—52 R 11 Claims

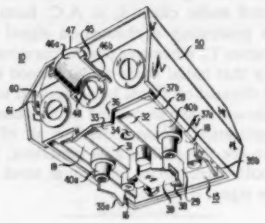


1. A cartridge for containing a first electronic circuit and being usable for exposing a set of terminals of the first circuit to permit the first circuit to be electrically connected with a second electronic circuit externally of the cartridge comprising: a housing having a pair of opposed ends, one of the ends of the housing being open; a circuit board mounted in the housing with one end margin of the circuit board being spaced inwardly from the open end of the housing, said circuit board being adapted to support said first electronic circuit and to permit a set of terminals of the first circuit to be located at said one end margin of the circuit board; a slide having an end wall provided with a slot aligned with said circuit board, the slide being shiftably mounted in the housing near said open end thereof for movement from a first position with said one end margin of the circuit board spaced inwardly from the slot to a second position with said one end margin of the circuit board extending through the slot, whereby a set of terminals on said one end margin of the circuit board will be exposed for connection to a second electronic circuit externally of the housing; and means biasing the slide toward said first position.

4,149,028
CUSTOMER SERVICE CLOSURES

Tillman J. Gressitt, Long Valley, and Arnold R. Smith, Chester, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 21, 1977, Ser. No. 789,740
Int. Cl.[2] H05K *5/00, 5/02, 5/03*
U.S. Cl. 174—65 R **20 Claims**



1. A closure for housing at least one of a variety of communications apparatus including:
- an insulative base having a plurality of indentations therein on one side for accepting mounting hardware to secure said communications apparatus to said base;
- means on an opposite side of said base for supporting said base on a variety of mountings including walls, horizontal and vertical conduits, pedestals, and mounting posts, said supporting means including
- a plurality of generally M-shaped projections integral with and extending outwardly from outer edges of said opposite side of said base, and
- a plurality of generally cylindrical projections integral with and extending outwardly from an intermediate region of said base, said cylindrical projections having a height approximately equal to a height of tip regions of said M-shaped projections so that said base is mountable upon a flat surface; and
- a cover slidably engaged with said base.

4,149,029
GRAPHICAL INPUT APPARATUS FOR ELECTRICAL EQUIPMENT

Peter J. Pobgee, Surbiton, England, assignor to National Research Development Corporation, London, England

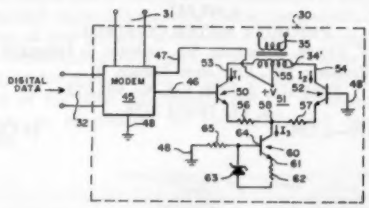
Filed Mar. 8, 1978, Ser. No. 884,550
Claims priority, application United Kingdom, Mar. 9, 1977, 09946/77
Int. Cl.[2] G08C *21/00*
U.S. Cl. 178—18 **3 Claims**

1. Apparatus for obtaining signals representative of the co-ordinates of a point indicated in a working area, including a sheet having a first surface and a fixed member having a second surface facing the first surface, one of the surfaces being partially formed by a plurality of parallel conductors spaced apart from one another, the other surface being a substantially homogeneous resistive surface or being formed by parallel conductors at right angles to those in the said one surface, the sheet being held in tension across, and adjacent to, the fixed member with the first and second surface out of contact, and the sheet being of such material and/or so mounted that the first and second surfaces are able to make contact temporarily with one another when the sheet is pressed towards the fixed member by means for indicating the position of a point, the apparatus also including resistive means for each surface which has parallel conductors so connected to the conductors that when a current is passed between two terminals of the resistive means a voltage gradient is set up from conductor to conductor of that surface in a direction at right angles to the conductors, changeover means for causing current supplied to the apparatus to flow alternately in two paths, a first path in which the current sets up a voltage gradient in one direction in the first surface, and a second path in which the current sets up a voltage gradient in a direction at right angles to the said one direction in the second surface, and means for deriving first and second signals when the sheet is pressed at a relatively small area towards the fixed member so that the first and second surfaces make contact, the first signal being dependent on the voltage of the first surface when current flows in the second surface and the second signal being dependent on the voltage of the second surface when the current flows in the first surface, and the first and second signals being representative of first and second co-ordinates of the said small area, respectively.

4,149,030
MULTI-DROP COMMUNICATIONS DEVICE

Donald S. Foreman, Fridley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 17, 1977, Ser. No. 807,467
Int. Cl.[2] H04L *5/14*
U.S. Cl. 178—59 **3 Claims**



1. A multi-drop communications device adapted to be utilized with a plurality of types of communication channels, including: digital data modem means adapted to transmit digital data over a communications channel between central station means and remote station means; said communications channel having a definite characteristic impedance and being either telephone line means or a pair of conductors; said digital data modem means including digital data conversion means with said digital data being converted between frequencies and voltages representative of the digital data being transmitted; current control means responsive to said data conversion means connecting said modem means to said communications channel wherein said current control means includes current driver means that has current flows that are representative of said data representative voltages regardless of whatever load is presented to said communications channel; said current driver means including differential amplifier means having a constant current source which is common to a pair of amplifier portions of said differential amplifier means; and high impedance coupling transformer means connecting said pair of amplifier portions to said communications channel.

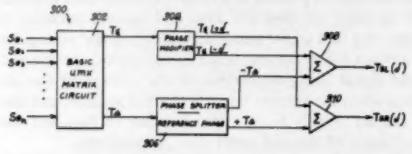
4,149,031
MULTICHANNEL MATRIX LOGIC AND ENCODING SYSTEMS

Duane H. Cooper, 918 W. Daniel St., Champaign, Ill. 61820

Division of Ser. No. 701,228, Jun. 30, 1976, Pat. No. 4,085,291, which is a continuation-in-part of Ser. No. 468,238, May 9, 1974, Pat. No. 3,985,978, Ser. No. 578,078, May 16, 1975, Pat. No. 3,970,788, Ser. No. 288,873, Sep. 13, 1972, Pat. No. 3,906,156, and Ser. No. 187,065, Oct. 6, 1971, Pat. No. 3,856,992. This application Sep. 26, 1977, Ser. No. 836,524

Int. Cl.[2] H04R *5/00*

U.S. Cl. 179—1 GQ **2 Claims**



1. In a UMX encoder comprising means for encoding multidirectional source signals in a plurality of at least two transmission channels with predetermined amplitude and phase relations indicative of source directions and two of said transmission channels being stereo compatible channels adapted to be decoded for formation of at least three loudspeaker presentation signals having source signals corresponding to every source direction appearing in a plurality of the presentation signals, the improvement comprising means for providing a left stereo compatible transmission channel T_{SL} and means for providing a right stereo compatible transmission channel T_{SR}, said T_{SL}, T_{SR} channels having encoding axes with an included angle in the range of from about 45° to about 90° wherein a source signal to be encoded from the encoding axis of one of said channels T_{SL}, T_{SR} is substantially null in the other of said channels.

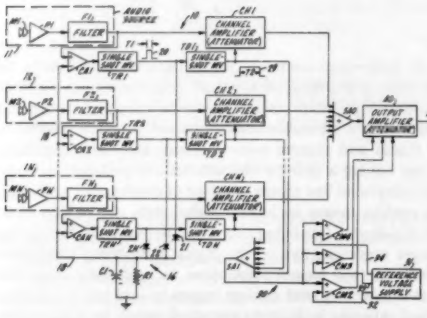
4,149,032
PRIORITY MIXER CONTROL

Richard W. Peters, Algonquin, Ill., assignor to Industrial Research Products, Inc., Elk Grove Village, Ill.

Filed May 4, 1978, Ser. No. 902,675

Int. Cl.[2] H04M *3/56*

U.S. Cl. 179—1 CN **14 Claims**



1. A priority mixer control for an audio system of the kind comprising N audio sources each including a microphone and each developing an initial audio signal, N audio channels each connected to one audio source and each including channel amplifier means actuatable from a normal minimum-gain "off" condition to a maximum-gain "on" condition in response to a channel-on signal, and an output channel, including a summing amplifier for additively combining the outputs of all of the audio channels to develop a system output signal, the priority mixer control comprising:

threshold signal generator means for generating a D.C. threshold signal of given polarity having an amplitude which decreases from a fixed maximum level as a predetermined function of time;

N control channels, one for each audio channel, each control channel including channel comparator means, for comparing the threshold signal with the initial audio signal from its associated audio channel, in A.C. form, and timing means for generating a channel-on signal of predetermined duration T2 whenever peak excursions of the given polarity for that initial audio signal exceed the threshold signal, the channel-on signal being applied to the channel amplifier means in the associated audio channel; and

threshold restoration means, coupling all of the control channels to the threshold signal generator, for restoring the threshold signal to its maximum level each time a channel-on signal is initiated.

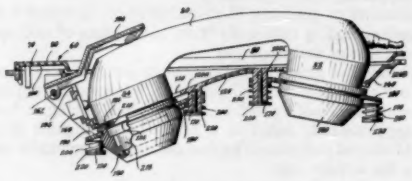
4,149,033
ACOUSTIC COUPLER ASSEMBLY

Matthew J. Costello, Bethel; Albert M. De Luca, New Fairfield; Thomas K. Saunders, New Milford, and James F. McGuire, Danbury, all of Conn., assignors to Graphic Sciences, Inc., Danbury, Conn.

Filed Nov. 14, 1977, Ser. No. 851,506

Int. Cl.[2] H04M *11/00*

U.S. Cl. 179—1 C **8 Claims**



1. An acoustic coupler for an information transmitting machine comprising

a housing,

an aperture in said housing for receiving a telephone handset including a transmitter and a receiver,

support means in said aperture including flexible mountings which render said support means and said entire handset including the transmitter and receiver somewhat movable with respect to said housing when a telephone handset is mounted thereon, and

a pressure arm pivotally mounted on said housing and overlying a portion of said aperture, said pressure arm being limited in its movement away from said aperture whereby, when a telephone handset is brought into engagement with said support means for mounting thereon, it bears against said pressure arm, which is disposed at its maximum elevation with respect to said support means, and the flexible mounting of said support means permits said handset to be set in place thereon beneath and in contact with said pressure arm.

4,149,034
RESOLUTION ENHANCED SOUND DETECTING APPARATUS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of and James M. Kendall, Pasadena, Calif.

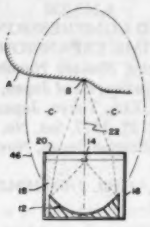
Filed Dec. 16, 1977, Ser. No. 861,392

Int. Cl.[2] G10K *10/00*

U.S. Cl. 179—1 MF **10 Claims**

1. Sound detecting apparatus for detecting sound moving in an environment containing a first fluid, comprising:

a concave acoustic mirror;
a microphone positioned in front of said mirror, so that sound impinging on said mirror can be concentrated by it onto said microphone;
an enclosure positioned to enclose at least some of the space lying between said mirror and microphone, including the space immediately in front of the mirror; and



a quantity of second fluid disposed in said enclosure, said second fluid being of a type which carries sound at a lower speed than does said first fluid, whereby to decrease the wavelength of sound to increase the resolution of said mirror.

4,149,035

METHOD AND APPARATUS FOR ENCIPHERING AND DECIPHERING AUDIO INFORMATION

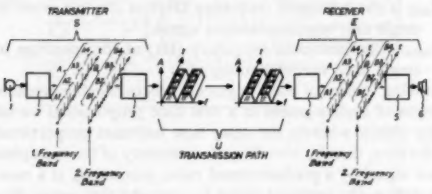
Peter Frutiger, Sonnahlde 18, Wangen, Switzerland

Filed Jun. 1, 1977, Ser. No. 802,427

Claims priority, application Switzerland, Jun. 1, 1976, 6893/76

Int. Cl.² H04R 1/06

U.S. Cl. 179—1.5 R **8 Claims**



1. A method for enciphering and deciphering analogue audio information, said method comprising the steps of:
subdividing said analogue audio information into a plurality of frequency bands, each of said frequency bands representing a different analogue information channel;
converting each of said analogue information channels into a respective train of digital signals, each said trains of digital signals representing a different digital information channel;
subdividing each of said digital information channels into a plurality of main blocks, each of said main blocks having the same time duration and being synchronous with a main block in each of the remaining said digital information channels;
subdividing each of said main blocks into an equal number of subsections, each of said subsections being of equal time duration;
permutating said subsections of each of said main blocks with subsections of its own main block and with subsections of other said main blocks which are synchronous therewith in accordance with key information so as to form a plurality of permutated digital information channels equal in number to said digital information channels;
converting each of said permutated digital information channels into respective second analogue information channels; and
combining said second analogue information channels into a single permutated analogue signal for further processing.

4,149,036

CROSSTALK COMPENSATING CIRCUIT

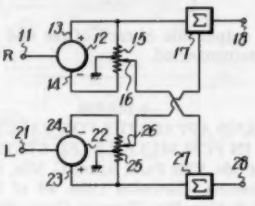
Michio Okamoto; Shigetaka Washizawa, and Osamu Kohsaka, all of Kawasaki, Japan, assignors to Nippon Columbia Kabushikikaisha, Tokyo, Japan

Filed May 2, 1977, Ser. No. 792,788

Claims priority, application Japan, May 19, 1976, 51-62563[U]; Aug. 9, 1976, 51-106290[U]; Aug. 9, 1976, 51-106291[U]

Int. Cl.² H04H 5/00

U.S. Cl. 179—15 BT **7 Claims**



1. A crosstalk compensating circuit having at least first and second signal transmission paths, said first transmission path receiving crosstalk signal components from said second transmission path and vice versa, said compensating circuit, for minimizing distortion occasioned by crosstalk signal components of different amplitude and polarity in said transmission paths, comprising in each said transmission path at least parallel connected electrical circuit components having an input and an output and an adding circuit connected to the output of the parallel connected electrical circuit components, one component of said parallel connected electrical components in each transmission path comprising adjustable means providing an adjustable compensating voltage connected to the adding circuit of the other transmission path, of a magnitude and polarity to compensate for crosstalk signal components therein.

4,149,037

HIGH COMMON MODE RELAY MULTIPLEXER

Marion J. Langan, Huntsville, Ala., assignor to Avco Corporation, Greenwich, Conn.

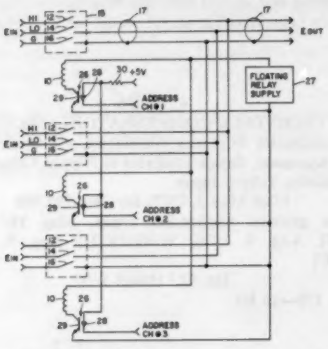
Filed Feb. 23, 1978, Ser. No. 880,512

Int. Cl.² H04J 3/04

U.S. Cl. 179—15 BL **4 Claims**

1. In a multiplexer having a plurality of signal channels, each of said channels having a plurality of signal lines, said lines including a high signal line, a low signal line and a guard line, a relay for each of said channels, said relays each having contacts connecting the signal input terminals of each line to its signal output terminal, each of said relays including a coil for actuating said contacts, the combination comprising:
a floating voltage supply;
an electronic switch connecting said supply across each of said coils;
channel selecting means for closing a selected switch;
the signal output side of each of said guard lines being interconnected;
a connection between one side of said supply and the output side of said interconnected guard lines;

the signal output side of each of said high signal lines being interconnected; and



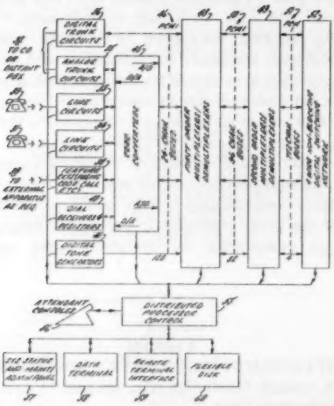
the signal output side of each of the said low signal lines being interconnected.

4,149,038

METHOD AND APPARATUS FOR FAULT DETECTION IN PCM MULIPLEXED SYSTEM

Satyan G. Pitroda, Villa Park; Byung C. Min, Bolingbrook, and Tej N. Chaddha, Clarendon Hills, all of Ill., assignors to Wescom Switching, Inc., Downers Grove, Ill.

Filed May 15, 1978, Ser. No. 906,244
Int. Cl.[2] H04J *3/14*
U.S. Cl. 179—15 BF **49 Claims**



1. In a digital time division multiplex telecommunications switching system having multiplex/demultiplex means for routing digital information samples, in dedicated time division channels, grouped in frames, to and from assigned locations in an information memory of a switching network, the switching system also having a control complex for controlling the switching network to establish time division connections in the switching network and for monitoring the connections in order to mark idle channels with a predetermined marking code, a fault detector for determining the existence of a fault condition in the switching system's information path including the multiplex/demultiplex means and the switching network comprising

(a) idle channel search means responsive to the predetermined marking code for selecting an idle channel in the multiplex/demultiplex means for use as a test channel;

(b) test pattern generation means for injecting a predetermined test pattern into the selected idle channel; and

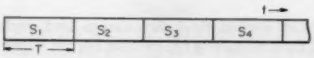
(c) test pattern checking means for receiving the test pattern from the selected idle channel after the test pattern has been routed through the multiplex/demultiplex means to and from the switching network and for determining whether the test pattern which was injected in the idle channel was accurately received from the idle channel.

4,149,039

FREQUENCY BAND COMPRESSION OF FDM USING TIME EXPANSION

Hiroshi Yuguchi, Fuchu; Makoto Nunokawa, Kawasaki, and Taiichiro Nakai, Fujisawa, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1977, Ser. No. 846,832
Claims priority, application Japan, Nov. 5, 1976, 51-132322; Jul. 7, 1977, 52-80469
Int. Cl.[2] G10L *1/06;* H04J *1/02*
U.S. Cl. 179—15.55 R **8 Claims**



1. A method of transmitting and receiving a plurality of voice signals using frequency band compression comprising the steps of: multiplexing in a transmission station the voice signals into a frequency division multiplex signal; dividing the multiplexed voice signal into a plurality of segments, each having a predetermined length (T), the length of the segment satisfying the formula:

$$(2\times f_{min})/(n-1)\geq 1/T\geq(2\times f_{max}/n)$$

where

T is the length of the segment;

n is the integer equal to or greater than 2;

f_{min} is the minimum frequency (Hz) of the spectrum in a single side band modulation signal;

f_{max} is the maximum frequency (Hz) of the spectrum in a single band modulation signal;

removing a part of each segment; processing the remaining portion of each segment in a first time proportional variable delay circuit wherein the delay time increases proportionally to the time, thereby lowering the frequency of the multiplexed voice signal by a predetermined ratio; processing, at a receiving station, the received signal in a second time proportional variable delay circuit wherein the delay time increases proportionally to the time, thereby raising the frequency of the received signal to reproduce the original multiplexed voice signal; and de-multiplexing the multiplexed voice signal into a plurality of voice signals.

4,149,040

IDENTIFIER CIRCUIT FOR IDENTIFYING PARTY LINE SUBSCRIBERS

Roger Atkinson, Huntsville, Ala., assignor to Itec, Inc., Huntsville, Ala.

Filed Nov. 7, 1977, Ser. No. 849,244
Int. Cl.[2] H04M *15/36*
U.S. Cl. 179—17 A **15 Claims**

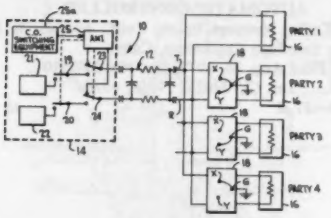
1. An identifier circuit for connection between a telephone system party line and a party line subscriber comprising

bus means for connection with the party line;

a reference potential terminal; and

time control means connecting said reference potential terminal to said bus means for a predetermined time after voltage is removed from the party line in response to the party line subscriber going off hook whereby said party

line identifier circuit can be tested to identify a calling party line subscriber during said predetermined time,



wherein expiration of said predetermined time is marked by restoration of said party line voltage.

4,149,041

TELEPHONE APPARATUS

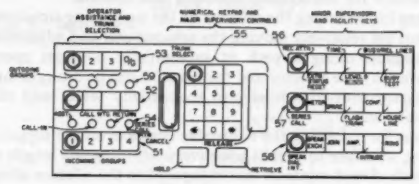
Stuart E. Card, Luton, and David F. Griffiths, Stevenage, both of England, assignors to The Post Office, London, England

Filed Sep. 13, 1977, Ser. No. 832,997

Claims priority, application United Kingdom, Sep. 17, 1976, 38630/76; Feb. 28, 1977, 8429/77

Int. Cl.[2] H04M *3/62*

U.S. Cl. 179—27 CA **28 Claims**



1. An operator's telephone control console for use in conjunction with a computer controlled telephone switching central processing unit, said control console including:

visual indicator means for visually displaying telephone switching information to an operator;

data input means for manually entering telephone switching control information;

audio frequency input and output means for establishing audio communication between an operator and said central processing unit;

microprocessor means connected to cooperate with said visual indicator means, said data input means and said audio frequency input and output means to facilitate control of telephone switching operations by an operator in conjunction with said central processing unit;

data transmission and reception means connected to establish a digital communication link between said microprocessor means and said central processing unit for controlling telephone switching;

wherein said microprocessor means controls at least some of said visual indicator means in accordance with data received by said data reception means from the central processing unit and in accordance with data input manually through said data input means and also controls the transmission of digital data by said data transmission means in accordance with the operator's instructions as received from said data input means and wherein said audio-frequency input and output means include an input and output for an operator's telephone.

4,149,042

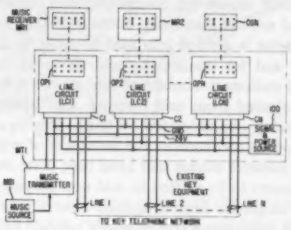
MODULATED RF CARRIER DISTRIBUTING ARRANGEMENT FOR KEY TELEPHONE LINE CIRCUITS

Gerry C. Balzer, Freehold, and Alexander Feiner, Rumson, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 27, 1977, Ser. No. 846,144

Int. Cl.[2] H04M *1/72*

U.S. Cl. 179—99 **27 Claims**



1. A signal distributing arrangement for providing information signals to selected key telephone line circuits when in the active noncommunicating mode, said distributing arrangement comprising:

transmitter means common to said line circuits for encoding information signals onto a carrier signal resulting in an encoded carrier signal,

means for distributing said encoded carrier signal to each said line circuit,

a receiver associated with each said selected line circuit said receiver comprising,

means for isolating said encoded carrier signal from other signals on said distributing means,

means for decoding said encoded carrier signal to obtain said information signals, and

means for applying said information signals to a central office telephone line connected to said associated line circuit.

4,149,043

CASSETTE TAPE RECORDER WITH RADIO RECEIVER

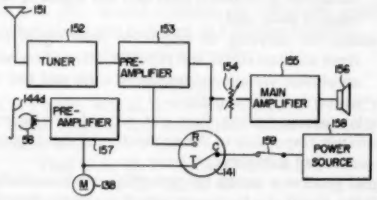
Satoshi Itoh, Nakaminato; Hideto Ueno, Katsuta, and Katsuya Satoh, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 23, 1976, Ser. No. 753,938

Claims priority, application Japan, Dec. 26, 1975, 50-155035

Int. Cl.[2] G11B *31/00, 5/54*

U.S. Cl. 179—100.11 **6 Claims**



1. A cassette tape recorder with a radio receiver, comprising a radio receiver system;

a tape recorder system including therein a chassis having a housing for receiving a cassette therein, a head base plate carrying a magnetic head thereon and attached slidably to

said chassis, a shifting mechanism for guiding said cassette into said housing when it is inserted and for sliding said head base plate from the stop position of the non-playing positions where said cassette is kept apart from said magnetic head, to the playing position where said magnetic head is in contact with the magnetic tape in said cassette, and a motor;

a power source;

a switch having a movable contact connected with said power source and a first and a second stationary contact to be selected by said movable contact, said first stationary contact being connected with said radio receiver system and said second stationary contact being connected with said tape recorder system;

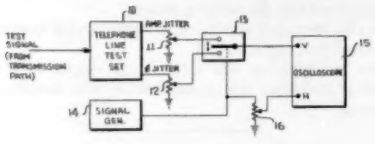
a change-over means for connecting said movable contact with said second stationary contact of said switch when said cassette is guided into said housing by said shifting member and for connecting said movable contact with said first stationary contact of said switch when said cassette is ejected from said housing; said cassette tape recorder being characterized by the provision of a temporary stopping mechanism, the actuation of which with an inserted cassette causes said head base plate and magnetic head thereon to be shifted to said non-playing position so that the magnetic head is spaced from a tape of the cassette and also causes said movable contact of said switch to be changed over to said first stationary contact.

4,149,044

METHOD AND APPARATUS FOR GRAPHICALLY DISPLAYING AMPLITUDE AND PHASE JITTER

Norris C. Hekimian, 1517 Baylor Ave., Rockville, Md. 20850, and Chong-Soo Kim, 951 Clopper Rd., Gaithersburg, Md. 20760

Filed Jan. 10, 1978, Ser. No. 868,429
Int. Cl.[2] H04B *3/46*
U.S. Cl. 179—175.3 R **8 Claims**



1. Apparatus for displaying amplitude and phase variations introdced onto a test signal while the test signal traverses a signal transmission path under test, said apparatus comprising:

signal processing means including:

means for receiving from said transmission path under test said test signal with said amplitude and phase variations;

means for deriving a phase jitter signal separated from said test signal and representative of instantaneous phase variations introduced onto said test signal in said transmission path; and

means for deriving an amplitude jitter signal separated from said test signal and representative of instantaneous amplitude variations introduced onto said test signal in said transmission path;

display means having first and second orthogonal input circuits responsive to the application of signals thereto for generating a display;

signal generator means for providing a substantially square wave signal at a frequency which is greater than the highest frequency of interest in said amplitude and phase jitter signals;

chopper means responsive to said square wave signal for alternately applying said amplitude jitter signal and said phase jitter signal to said first input circuit at the frequency of said square wave signal; and

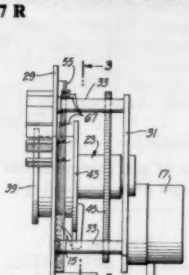
means connecting said square wave signal to said second input circuit.

4,149,045

AUTOMATIC CONTROLLER

Richard S. Karbo, Newport Beach, Calif., assignor to Hydro-Rain, Inc., San Juan Capistrano, Calif.

Filed Aug. 25, 1977, Ser. No. 827,610
Int. Cl.[2] H01H *19/00, 43/04*
U.S. Cl. 200—37 R **15 Claims**



1. An automatic controller comprising:

a supporting structure;

a plurality of circuits mounted on said supporting structure;

a plurality of adjustable contacts, each of said adjustable contacts being in at least one of said circuits;

a selector for sequentially selecting said circuits;

means for mounting the selector on the supporting structure;

means for relatively moving the selector and said adjustable contacts along a path at substantially constant speed whereby the selector and the contacts can be brought into engagement sequentially to sequentially select said circuits; and

means for mounting the adjustable contacts on the supporting structure to permit selectively adjusting the length of each of such contacts that is exposed to the selector along said path while maintaining the exposed portions contiguous whereby the length of time of engagement between the selector and each of the exposed portions of the contacts can be adjusted without introducing significant gaps between the exposed portions of the contacts during which the selector would not engage any of said exposed portions of said contacts.

4,149,046

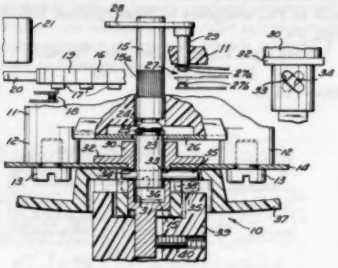
ROTATIONAL LINE SWITCH CONTROL

Donald E. Bolin, Galveston, Ind., assignor to The Scott & Fetzer Company, Kokomo, Ind.

Filed May 16, 1977, Ser. No. 797,258
Int. Cl.[2] H01H *43/00*; G05G *1/08*
U.S. Cl. 200—38 A **8 Claims**

1. A control mechanism for a sequential timer, comprising an axially movable timer shaft adapted to open a circuit in a timer upon axial movement of said shaft in a first direction and to close said circuit upon axial movement of the shaft in a second direction, said circuit including a plurality of switches adapted to control a number of different timed operations, shaft extension means on said timer shaft for manually rotating said timer shaft in one direction, said switches being sequentially opened and closed upon manual rotation of said timer shaft, means to prevent rotation of the timer shaft in the other direction, cam means on said shaft extension means for axially moving said shaft in said first direction upon initial manual rotation of said shaft extension means in said one direction to thereby open said circuit and for then rotating the timer shaft in said one direction upon further manual rotation of said shaft extension

means, so that said switches are sequentially opened and closed with the circuit open to prevent switch arcing and short pul-



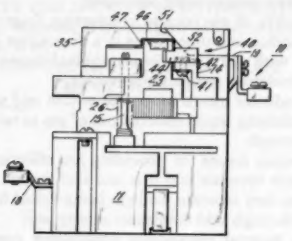
sing of current, and means to prevent axial movement of said shaft extension.

4,149,047

CONTACTOR HAVING INTERLOCK FOR MOVABLE CONTACT CARRIER

Gerald R. Duble, New Windsor, Md., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jun. 6, 1977, Ser. No. 803,950
Int. Cl.[2] H01H 9/20
U.S. Cl. 200—50 A **5 Claims**



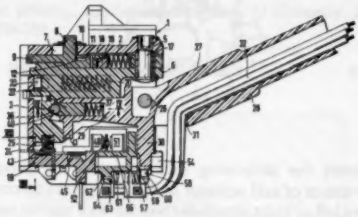
1. An electrical switching device including stationary contact means, movable contact means operable into and out of engagement with said stationary contact means, a stationary support means to which said stationary contact means is mounted, carrier means to which said movable contact means is mounted, means for guiding movement of said carrier means along a predetermined path relative to said support means between a contact closed and a contact open position, openable cover means cooperating with portions of said support means to enclose said stationary and said movable contact means, interlock means including a molded plastic member mounted to said support means and movable between a first and a second position, said member when in said first position being clear of said path and when in said second position having a portion thereof in said path, said interlock means also including biasing means automatically operating said member to said second position when said cover is open thereby blocking movement of said carrier means to said contact closed position, said cover means upon securement thereof in closed position engaging said member and operating the latter to said first position, means defining a pivot extending parallel to said path, said member pivoting about said pivot in moving between said first and second positions.

4,149,048

MOTOR VEHICLE SIGNAL SWITCH

Friedhelm Winter, Ludenscheid; Klaus Buhle, Schwerte, and Ralf Eifer, Iserlohn-Letmathe, all of Fed. Rep. of Germany, assignors to Firma Leopold Kostal, Luedenscheid, Fed. Rep. of Germany

Filed Apr. 25, 1977, Ser. No. 790,405
Claims priority, application Fed. Rep. of Germany, May 13, 1976, 2621289; Oct. 28, 1976, 2649329
Int. Cl.[2] H01H 3/16, 9/00
U.S. Cl. 200—61.54 **26 Claims**



1. A motor vehicle signal switch of the type adapted to be mounted on a motor vehicle steering column comprises:

(a) a switch housing formed by at least a front wall connecting a pair of spaced-apart side walls and having a switching profile in the interior thereof;

(b) a contact plate supported within said housing, said contact plate carrying a headlamp switch having a first contact and a second contact, and a direction indicator blinker light switch having engagement positions and change of lane tipping positions;

(c) a direction indicator blinker light switching piece having a catch profile formed thereon, said switching piece being pivotally supported within said housing about a first axis and engaging said switching profile for pivoting movement to selectively contact said blinker light switch positions;

(d) a molded plastic material switching lever operatively associated with said switching piece for said pivoting thereof about said first axis, said switching lever having an integral catch extension, and including an operating extension and a switching arm having a free end, said switching lever being pivotally mounted on said switching piece about a second axis perpendicular to said first axis with said catch extension of said switching lever abutting said catch profile of lateral guides, piece to guide said pivoting of said switching lever about said second axis;

(e) a change-over slide slidably mounted within said housing and carrying a change-over contact spring, said change-over slide being operatively associated with said operating extension whereby pivoting said switching lever about said second axis slides said change-over slide to contact said change-over contact spring selectively with one of said first and second contacts to effectuate headlamp switching between said first and second contacts.

4,149,049

SWITCH USING RESILIENT ANNULAR CONTACTOR

Eric L. Long, Lincoln, Ill., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Dec. 14, 1977, Ser. No. 860,381
Int. Cl.[2] H01H 23/24
U.S. Cl. 200—67 G **9 Claims**

1. An electric switch comprising:

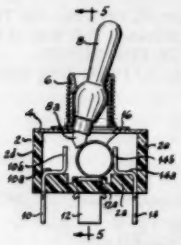
a housing;

means defining a cavity in said housing, said cavity having a bottom wall and left and right spaced side walls;

stationary contact means disposed at at least one of said walls;

a resiliently deformable cylindrical electrically conductive contactor freely trapped in said cavity;

actuator means movably mounted to said housing for oscillating movement in a plane normal to the axis of said



cylinder for deforming said contactor in response to movement of said actuator means such that said contactor snaps left or right along said bottom wall against said right or left side wall as said actuator means passes through an overcenter engagement point with said contactor.

4,149,050

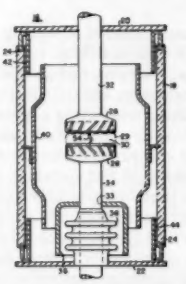
CUP-SHAPED CONTACTS FOR VACUUM INTERRUPTERS HAVING A CONTINUOUS ANNULAR CONTACT SURFACE

Joseph G. Gorman, Murrysville; Richard L. Hundstad, Wilkinsburg; Roy E. Voshall, New Alexandria, all of Pa., and Paul O. Wayland, Montour Falls, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 540,206, Jan. 10, 1975, abandoned. This application Apr. 7, 1977, Ser. No. 785,382

Int. Cl.[2] H01H *33/66*

U.S. Cl. 200—144 B **5 Claims**



1. A vacuum type circuit interrupter comprising:

a pair of relatively movable contacts, movable between a closed position in engagement and an open position spaced apart to form an arcing gap therebetween across which an arc can form during circuit interruption;

a housing which is evacuated surrounding said pair of contacts;

at least one of said contacts comprising a flat round base portion; a circular side wall portion extending perpendicular from said flat round base portion; a lip portion extending radially inward from the top of said circular side wall portion; said side wall portion and said lip portion having slots formed therein; and an annular contact cap, having no slots formed therein is disposed on said lip portion, said annular contact cap extends radially outward to the outer diameter of said circular side wall portion and radially inward beyond said slotted lip portion to form a smooth contact surface.

4,149,051

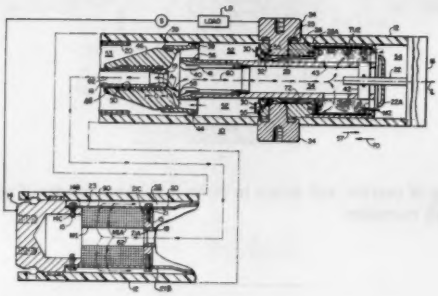
ELECTRICALLY CONDUCTING GAS CONDENSER SUPPORT FOR A PUFFER CIRCUIT INTERRUPTER

Stanislaw A. Milianowicz, Monroeville, and Fred Bould, Edgewood, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 27, 1977, Ser. No. 791,433

Int. Cl.[2] H01H *33/88*

U.S. Cl. 200—148 A **7 Claims**



1. A circuit interrupter, comprising:

(a) insulating tube means having first and second spaced external electrical terminal means thereon, said external terminal means communicating with the internal portion of said tube means;

(b) first electrical arc contact means disposed within said tube means in a disposition of electrical contact with said first external terminal means;

(c) second electrical arc contact means disposed within said tube means in a disposition of electrical contact with said second external terminal means, said first and said second arc contact means being separable;

(d) a plurality of electrically conducting finger means disposed within said tube means in a disposition of electrical contact with said first external terminal means for forming a gas condenser means support cage;

(e) gas condenser means supported within said support cage for condensing liquid material out of gas as said gas passes therethrough;

(f) gas forcing means for providing arc effecting gas to an arc region between said first and said second arc contact means as they separate, said gas being exited from said arc region through said condenser means; and

(g) mean internal electrically conducting contact means disposed within said tube means in a disposition of electrical contact with said second external terminal means, relative motion between said main internal contact means and said finger means assisting in causing the making and breaking of electrical continuity between said first and said second external terminal means, said finger means and said main internal contact means conducting substantially more current between said external terminal means when in a closed state than said arc contact means conduct.

4,149,052

SAFETY-DISCONNECT POWER TOOL SWITCH

Earl T. Piber, Oconomowoc, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 30, 1978, Ser. No. 891,898

Int. Cl.[2] H01H *1/16, 3/32, 9/02*

U.S. Cl. 200—153 LA **13 Claims**

1. A safety-disconnect switch comprising:

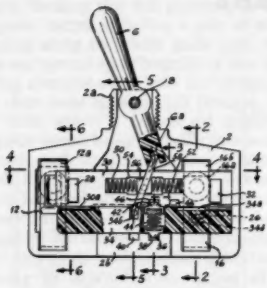
an insulating housing;

and means in said housing providing a controllable electrical connection under normal conditions and effecting a safety-disconnect under contact-weld conditions comprising:

a plurality of stationary contacts in said housing;

a plurality of movable contacts in said housing arranged to

close and open with respect to said stationary contacts to complete and interrupt said electrical connection;
switch operating means for said movable contacts for closing and opening the same;
safety-disconnect means associated with at least one set of said movable and stationary contacts and normally operable to allow the associated movable contact to engage the stationary contact when said switch operating means is actuated to close said contacts;



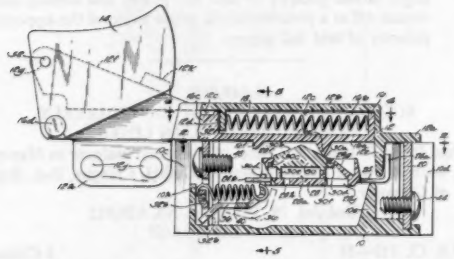
means preventing conditions that could cause welding between said one stationary contact and its associated movable contact;
and means comprising tripping means normally restrained but movable in response to actuation of said switch operating means in attempted opening of said movable contacts under welded contact conditions to actuate said safety-disconnect means and afford separation of at least said one of said stationary and movable contacts.

4,149,053

SAFETY DISCONNECT ELECTRIC SWITCH

Eric L. Long, Mequon, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 26, 1976, Ser. No. 735,691
Int. Cl.[2] H01H *9/06*
U.S. Cl. 200—157 **19 Claims**



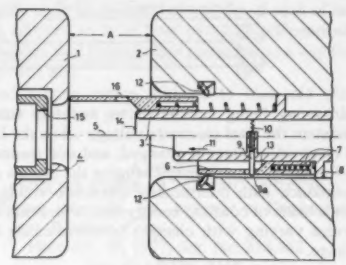
1. A safety-disconnect electric switch comprising:
an insulating housing; and
means providing a controllable electric connection through said switch within said housing comprising:
stationary contact means mounted in said housing;
movable contact means in said housing arranged to close and open with respect to said stationary contact means to complete and interrupt said electric connection;
switch operating means for said movable contact means for closing and opening the same;
safety-disconnect connector means in said electric connection biased to open but normally held closed by said switch operating means;
and tripping means in said switch operating means normally restrained but movable in response to actuation of said switch operating means in attempted opening of said movable contact means under welded-contact conditions to afford tripping thereof to release said biased safety-disconnect connector means to cause it to open and interrupt said electric connection.

4,149,054

DISCONNECT SWITCH FOR METAL-ENCAPSULATED HIGH-VOLTAGE SWITCHING INSTALLATIONS

Horst Kopplin, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 17, 1978, Ser. No. 870,066
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1977, 2704389
Int. Cl.[2] H01H *9/20, 9/30, 9/48*
U.S. Cl. 200—318 **6 Claims**



1. A disconnect switch for use in a metal encapsulated high-voltage switching installation comprising:
a movable switching pin;
a mating contact axially associated with said switching pin;
a tube of insulating material arranged in surrounding relationship to said switching pin;
spring means braced against said switching pin for applying a force to said tube;
means for latching in the on and off position of said switch said tube against the force of said spring;
and means for unlatching said latching means during the course of movement of said switching pin to bring said switch into the on position, thereby causing said tube to bridge the gap between said switching pin and said mating contact before said switching pin makes metallic contact with said mating contact, whereby said gap is enclosed and arc penetration therefrom prevented.

4,149,055

FOCUSING ION ACCELERATOR

Robert L. Seliger, Agoura, and James W. Ward, Canoga Park, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

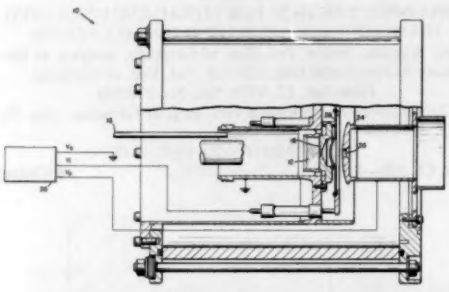
Filed May 2, 1977, Ser. No. 792,965
Int. Cl.[2] H01J *37/04*
U.S. Cl. 250—396 R **8 Claims**

1. A low perveance focusing ion accelerator for producing an ion beam along an axis comprising:
a screen electrode having a beam opening therein on said axis;
means for producing ionic plasma upstream from the said beam opening;
means for extracting and focussing an ion beam from said plasma through said beam opening, said means for extracting and focussing comprising an intermediate electrode and a final electrode, said intermediate electrode and said final electrode each having a beam opening therein on said axis, said beam openings being in alignment on said axis so that an ion beam can be delivered therethrough, said intermediate electrode being positioned between said

screen electrode and said final electrode and configured to correspond to the shape of a selected equipotential voltage;

means connected to said screen electrode, said intermediate electrode and said final electrode for maintaining selected relative potentials therebetween; and

means for controlling the plasma density, said means for



maintaining being connected to maintain substantially consistant the final electrode voltage while the intermediate electrode voltage is changed, and said means for controlling the plasma density changing the plasma density in accordance with intermediate electrode voltage to produce a beam of constant energy, and with beam focus and current varying with changes in intermediate electrode voltage.

4,149,056

MICROWAVE OVEN WITH FOOD TEMPERATURE-SENSING MEANS

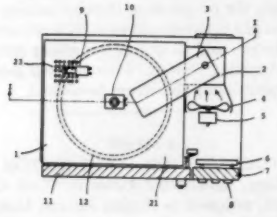
Tetuya Kaneshiro, Kashiwara, and Takeshi Tanabe, Higashiosaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 5, 1977, Ser. No. 794,090

Claims priority, application Japan, May 13, 1976, 51-54927; Jul. 27, 1976, 51-89859

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 R **28 Claims**



1. A microwave oven with a magnetron for cooking food comprising:

a food temperature-sensing probe for monitoring an internal temperature of the food placed in the microwave oven for cooking purposes;

a connector means provided on a wall of microwave oven cavity including a fixed connector member and a rotatable translator member;

a communication means for electrically and mechanically connecting the food-temperature-sensing probe to said rotatable translator member; and

a control unit for controlling magnetron energization to adjust the internal temperature of the food to a selected value in response to an output signal from the food temperature-sensing probe which is introduced into the control unit through said communication means and said connector means;

said control unit generates a gate signal corresponding to said selected value to trigger a switching element to control magnetron energization.

4,149,057

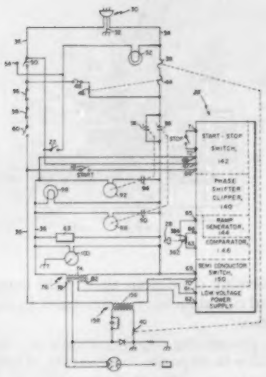
VARIABLE POWER CONTROL MICROWAVE OVEN

Rex E. Fritts, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Jun. 27, 1977, Ser. No. 810,537

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 B **10 Claims**



1. A microwave oven comprising:

a cavity having an access aperture and a closure member;

a source of microwave energy comprising a magnetron coupled to said cavity;

a power supply for said magnetron comprising a transformer;

semiconductor switch means for cyclically connecting said transformer at a first cycle rate greater than 1 in 10 seconds to a source of AC power having a second cycle rate higher than said first cycle rate; and

means for turning said switch on at a predetermined phase angle of one polarity of said AC power and turning said switch off at a predetermined phase angle of the opposite polarity of said AC power.

4,149,058

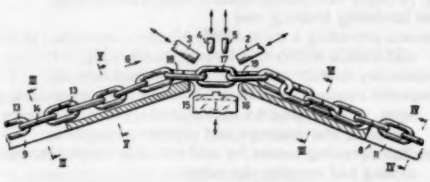
SUCCESSIVE WELDING OF IMMEDIATELY CONSECUTIVE CHAIN LINKS

Paul Rahn, Cologne, Fed. Rep. of Germany, assignor to Meyer, Roth & Pastor Maschinenfabrik GmbH, Cologne, Fed. Rep. of Germany

Filed Jul. 28, 1977, Ser. No. 820,013

Int. Cl.[2] B23K *11/02*

U.S. Cl. 219—51 **3 Claims**



1. In a chain welding apparatus for electrically welding the joint of each link of a selected chain in succession, and including a welding station provided with welding electrodes and upsetting tools, a saddle located beneath the welding station

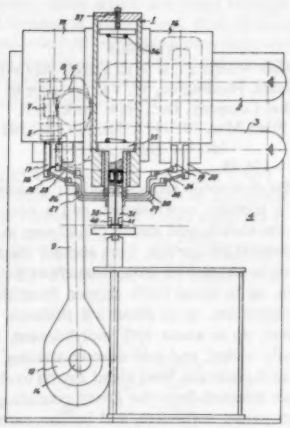
for supporting a chain link to be welded, first guide means disposed upstream of the welding station for guiding a length of chain toward the welding station and defining a chain guide path that slopes upwardly toward the welding station, and second guide means disposed downstream of the welding station for guiding a length of chain away from the welding station and defining a chain guide path that slopes downwardly away from the welding station, each of the guide means presenting, at the end thereof directed toward the welding station, an orienting edge for supporting the straight sides of a respective chain link flanking that link presently at the welding station, each guide means including a pair of mutually parallel webs extending along the chain guide path of its associated guide means and spaced apart laterally of that chain guide path for supporting alternate chain links in a reclining position and intervening chain links in an upright position, with the end of the pair of webs which is nearest the orienting edge of its associated guide means being spaced a selected distance along the chain guide path from that orienting edge, the improvement wherein the selected distance between said end of each said web pair and said orienting edge of its associated guide means corresponds at least to that length of the selected chain which is required for the selected chain to execute a twist of 90° and each said guide means further comprises a trough-like channel having an internal cross section of approximately semi-circular shape and extending between said orienting edge and said web pair of its associated guide means.

4,149,059

ELECTRICAL MULTI-SPOT RESISTANCE WELDING MACHINE

Hans Gött; Josef Ritter; Klaus Ritter; Gerhard Ritter, and Rudolf Scherr, all of Graz, Austria, assignors to EVG Entwicklungsu. Verwertungs-GmbH, Steiermark, Austria

Filed Jul. 27, 1977, Ser. No. 819,382
Claims priority, application Austria, Jul. 27, 1976, 5516/76
Int. Cl.² B23K *11/10*
U.S. Cl. 219—56 **10 Claims**



1. An electrical multi-spot resistance welding machine for the production of welded bar gratings produced by welding cross-bars with the aid of electrodes into the narrow sides of substantially parallel upright flat bars,

comprising in combination:

a frame;

a pressure-beam guided on said frame for movements towards and away from the cross-bars to be welded;

a pressure-bar mounted within said pressure-beam and extending across at least a part of the width of the machine, said pressure-bar being slidable relative to said pressure-beam;

a first biasing means acting between said pressure-beam and said pressure-bar urging said pressure-bar towards said cross-bars;

a plurality of stops retaining said pressure-bar within said pressure-beam against the action of said first biasing means;

means defining a feed path for the flat bars;

two rows of electrodes arranged transverse to said feed path;

holding means disposed on said pressure-bar and adapted for holding said two rows of electrodes, said electrodes in said rows being adapted to be aligned in pairs in said feed direction by said holders;

a plurality of welding transformers mounted on said pressure-beam, operable to move together with said pressure-beam towards and away from said cross-bars, each transformer including a pair of terminals of opposite polarity;

said electrodes of each of said pairs being adapted to be connected to a respective transformer at said terminals of opposite polarity, and said electrodes of each of said pairs being adapted to be at least partially independently slidable within said pressure-bar towards and away from said cross-bars; and

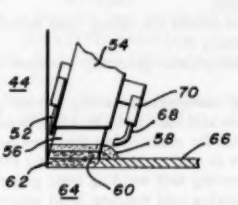
a second biasing means adapted to bias said electrodes towards said feed path.

4,149,060

ANGLED STRIP CLADDING SYSTEM

John J. Barger, Ringgold, Ga., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 25, 1977, Ser. No. 818,362
Int. Cl.² B23K *9/18*
U.S. Cl. 219—73 **4 Claims**



1. In an apparatus for the submerged-arc cladding of metallic work pieces with metal electrode strips melting in an electric arc while forming weld beads on the work piece, said work piece having a surface to be clad and an obstruction extending in a direction generally transverse to the surface to be clad, said obstruction being of a material having a relatively high magnetic permeability, comprising an electrode strip, means operative to move the electrode strip and work piece relative to each other, means for passing an electric current through the electrode and for creating an electric arc between the work piece and the electrode strip to melt the strip and to deposit a cladding layer on the work piece in a generally linear cladding zone, means for depositing a weldingflux covering in the region of the electric arc and at least the portion of the weld bead where the deposited cladding material is in a molten state, the flux covering being sufficient to provide a layer of molten flux overlaying the region of molten metal, and electromagnetic means having first and second poles of opposite polarity positioned adjacent opposite edges of the electrode strip, the improvement comprising:

a. said electrode strip being inclined away from the obstruction in the plane of the strip;

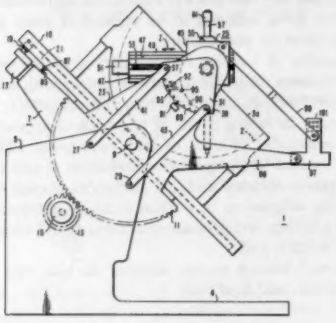
b. said first pole located at the edge of said electrode strip adjacent to the obstruction being positioned such that magnetic flux is transmitted from said first pole into said obstruction, thence from said obstruction thru said layer of molten flux to said second pole;

c. said layer of molten flux having a relatively high magnetic permeability.

4,149,061
APPARATUS FOR CONTINUOUSLY CLADDING A DISHED SURFACE

David Mort, Monroeville, Pa., and Ben B. Hood, Valrico, Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 2, 1977, Ser. No. 847,864
Int. Cl.[2] B23K 9/04
U.S. Cl. 219—76.14 13 Claims



1. Apparatus for continuously cladding a dished surface, said apparatus comprising:

a pedestal,

a turntable assembly pivotally mounted on said pedestal and having a turntable rotatably mounted thereon,

first drive means for rotating said turntable at varying angular velocities,

second drive means for tilting said turntable assembly at least generally 90°,

a welding manipulator pivotally mounted on said turntable assembly,

said welding manipulator having a base portion, a boom mounted on said base and a welding head disposed on the boom means for maintaining said welding head in a fixed orientation as said turntable assembly tilts,

means for moving said welding head generally vertically,

means for moving said welding head generally horizontally in two directions at right angles to each other,

means for sensing the tilt angle of said turntable assembly,

means responsive to said tilt angle to move said welding head adjacent a boom dead center position of said dished surface,

means responsive to said tilt angle to vary the angular speed of said turntable to provide a generally constant linearly speed of a point on said dished surface relative to said welding head, and

means responsive to one revolution of said turntable to change the tilt a predetermined amount depending on the shape of the dished surface and the previous angle at which the turntable was tilted,

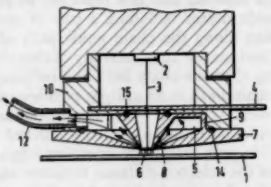
whereby cladding is deposited on the dished surface in circular rings forming generally continuous cladding over the entire dished surface except for a relatively small portion adjacent the center thereof.

4,149,062
SCAVENGER HOOD FOR LASER

Ernst Limmer, and Helmut Höfl, both of Freising, Fed. Rep. of Germany, assignors to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany

Filed Sep. 9, 1977, Ser. No. 832,041
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643981
Int. Cl.[2] B23K 9/00
U.S. Cl. 219—121 L 6 Claims

1. Laser beam scribing apparatus having a nozzle assembly comprising a first member defining an elongated passage terminating at one end in an outlet aperture and providing a laser beam travel path; transparent means closing the opposite end of said passage; said first member including spaced apart web members connecting said first member to a second member surrounding said first member, said second member defining a suction chamber surrounding said elongated passage; and means for connecting said suction chamber with vacuum source means; said suction chamber terminating in a suction



aperture and having a progressively increasing cross-sectional area in a direction from said suction aperture into the interior of said suction chamber, said suction aperture concentrically surrounding and substantially coplanar with said outlet aperture such that said elongated passage is effectively isolated from said suction chamber and external foreign particles in the region of said apertures pass, on application of said vacuum source, substantially solely through said suction aperture into said suction chamber and not into said elongated passage.

4,149,063
FLUX CORED WIRE FOR WELDING Ni-Cr-Fe ALLOYS

Robert A. Bishel, Huntington, W. Va., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Mar. 28, 1977, Ser. No. 782,301
Int. Cl.[2] B23K 35/368
U.S. Cl. 219—146.23 17 Claims

1. A tubular composite self-shielded arc welding electrode comprising: a metallic outer sheath and a core within and enclosed by the sheath, said sheath containing, in weight percent, up to about 0.2% carbon, from about 0.1% to about 4% manganese, up to about 20% iron, from about 0.05% to about 0.75% silicon, up to about 0.6% copper, from about 10% to about 24% chromium, up to about 2% titanium, up to about 4% columbium, up to about 10% molybdenum, and the balance essentially nickel, and said core containing, in parts by weight of core ingredients, from about 2 parts to about 20 parts of a carbonate selected from the group consisting of calcium carbonate, strontium carbonate, and barium carbonate, from about 20 parts to about 45 parts calcium fluoride, from about 3 parts to about 15 parts of a fluoride selected from the group consisting of potassium titanium fluoride and sodium titanium fluoride, from about 2 parts to about 10 parts potassium zirconium fluoride, from about 5 parts to about 15 parts titanium oxide, from about 2 parts to about 15 parts manganese oxide, up to about 4 parts zirconium oxide, up to about 3 parts magnesium oxide, up to about 20 parts columbium, from about 0.3 parts to about 2.2 parts magnesium, up to about 15 parts manganese, up to about 10 parts chromium, up to about 25 parts molybdenum, and from about 5 parts to about 30 parts of at least one element selected from the group consisting of nickel and iron.

4,149,064

METHOD AND APPARATUS FOR ADJUSTING ELECTRICAL NETWORKS CONSISTING OF SYNTHETIC FOILS

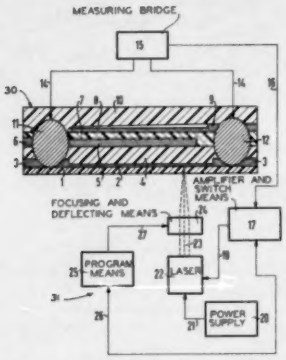
Karl H. Houska, and Eberhard Wernitz, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 16, 1977, Ser. No. 797,338

Claims priority, application Fed. Rep. of Germany, May 19, 1976, 2622324

Int. Cl.[2] B23K 9/00

U.S. Cl. 219—121 LM 7 Claims



1. A method for adjusting an electrical characteristic of an electrical component of an electrical network having a stack of foils secured together, said stack having at least one synthetic carrier foil with a metal layer and an outer thermoplastic cover foil engaging one of the metal layers so that each metal layer of the stack is sandwiched between a pair of foils, said network having connecting wires which are fused through the outer cover foil and welded in contact with desired portions of the metal layers, said method comprising providing said electrical network, and trimming a metal layer of a component of the network by directing a laser beam through at least one of said foils and focusing it onto the metal layer.

4,149,065

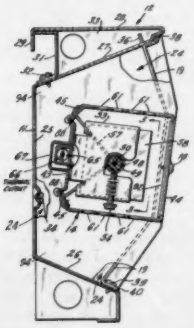
ELECTRIC SPACE HEATER UNIT

James E. Goff; Edwin T. Hayes, both of Knoxville, and A. J. Seldon Green, Louisville, all of Tenn., assignors to Tennessee Plastics, Inc. (TPI), Johnson City, Tenn.

Filed Feb. 22, 1977, Ser. No. 770,576

Int. Cl.[2] F24H 9/08, 3/04; H05B 1/02

U.S. Cl. 219—365 5 Claims



1. An elongated electric space heater unit adapted to be mounted on and in front of a vertical mounting surface with the longitudinal axis of the unit positioned horizontally; said unit including an elongated trough-like wall box and an elongated heater subassembly secured to said wall box; said wall box including a generally vertical rear wall, an elongated upper inclined wall sloping forward and upward from the upper edge of said rear wall, and an elongated lower inclined wall sloping forward and downward from the lower edge of said rear wall; said rear wall, said upper inclined wall and said lower inclined wall being formed from a single element; said heater subassembly including an elongated housing generally of rectangular cross-section and having upper and lower ventilating openings in respective upper and lower horizontal walls of said housing, an elongated sheathed electric resistance heating element disposed within said housing, spaced vertically disposed fins extending transverse to said heating element and mounted within said housing in heat conducting relationship with said heating element, and thermal cutout means disposed at the rear of said housing and being connected in electrical circuit with said heating element; said housing being positioned in front of and spaced from said rear wall; said housing also positioned in confronting spaced relationship with respect to the front surfaces of said upper and lower inclined walls; said housing including a front cover section of generally U-shaped cross-section and an elongated rear section secured to the cover section at the ends of its U-arms; and means effective prior to securement of said cover section to said rear section to secure said heating element to said rear section against longitudinal and transverse movement of said heating element relative to said rear section.

4,149,066

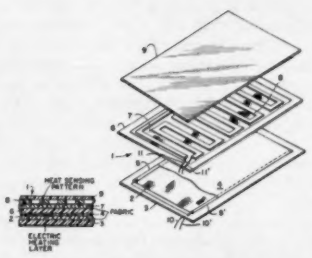
TEMPERATURE CONTROLLED FLEXIBLE ELECTRIC HEATING PANEL

Akitoshi Niibe, #4 Nishikubo, Sakuragawa-Machi, Shiba, Minato-ku, Tokyo, Japan

Filed Nov. 20, 1975, Ser. No. 633,654

Int. Cl.[2] H05B 1/02, 3/36; H01C 7/00

U.S. Cl. 219—505 6 Claims



1. A temperature controlled flexible electric heating panel comprising a first thin flexible electrically insulating layer, a flexible heat sensitive changeably conductive pattern on the layer, said flexible heat sensitive changeably conductive pattern comprising a serpentine pattern extending back and forth across the flexible insulating layer between the lateral edges thereof, said flexible conductive pattern having first and second ends, lead wires connected to said ends, a second thin flexible electrically insulating sheet coextensive with said first layer and covering said conductive pattern, said second sheet being bonded to said first layer around the peripheral edges thereof, a third thin flexible electrically insulating sheet coextensive with and positioned beneath said flexible insulating layer, said second and third sheets being moisture insulating, said second and third sheets being peripherally sealed to each other for insulating the heat sensitive changeably conductive pattern from electrical and moisture contact, a fourth thin flexible moisture and electrical insulation sheet coextensive with and positioned below said third sheet, a thin flexible

electric heat-emitting resistance layer disposed between said third and fourth sheets, said heat-emitting layer and said conductive pattern being substantially coextensive, power leads connected to the heat-emitting layer for connecting the heat-emitting layer to a source of electrical power, means for sealing the fourth and second sheets peripherally, thereby insulating the heat-emitting layer from moisture and electrical contact, control means connected to said power leads for controlling power supplied through the power leads to said heat-emitting layer, said control means including means connected to said lead wires for sensing the temperature induced current flow variations in said conductive pattern and means for varying the power supplied to said power leads in response to said current variation in said conductive pattern.

4,149,067

AQUARIUM HEATER

Wolfgang Jager, 153 AufDemBerg, Wustenrot-Finsterrot, Fed. Rep. of Germany (7156), assignor to Erhard Boettger and Wolfgang Jager, both of El Segundo, Calif.

Filed Nov. 15, 1976, Ser. No. 741,937

Int. Cl.[2] H05B *5/54*

U.S. Cl. 219—523 **11 Claims**

1. An aquarium heater, including

an elongated electrical heater element including an insulating member made from an insulating material and a wire heater wound on the insulating member from one end of the insulating member to the other end of the insulating member,

an outer sheath of insulating material, the outer sheath enveloping the heater element and sealed at both ends,

a pair of electrically insulating spacer members disposed individually one at each end of the insulating member of the heater element for spacing the heater element from the inner surface of the outer sheath and including means retaining the ends of the wire heater in fixed positions at each end of the insulating member, each of the spacer members being formed as a split ring end each having a notched portion adjacent the split to receive one end of the wire heater in wrapped relationship and to retain such end in position and each of the split rings having a plurality of protuberances extending outwardly to the inner surface of the outer sheath, at least one of the protuberances being disposed adjacent the notched portion and the split for further retaining such end of the wire heater in position, and

means for supplying electrical energy to the wire heater.

4,149,068

CIRCULAR SLIDERULE IMPROVEMENT

Morris Simon, 8 Otis Pl., Boston, Mass. 02108

Filed Nov. 14, 1977, Ser. No. 851,166

Int. Cl.[2] G06C *27/00*; G06G *1/02*

U.S. Cl. 235—78 R **7 Claims**

1. A circular sliderule comprising:

(a) a central hub having formed thereon on one end thereof a stop;

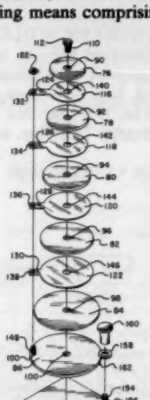
(b) a plurality of reference discs rotatably positioned on said central hub;

(c) a separating spacer element positioned between selected reference discs, each said spacer element having formed thereon a protuberance,

(1) said protuberance extending outwardly;

(d) means, associated with said protuberance, for preventing rotation of said spacer elements while permitting rotation of said reference discs,

(1) said preventing means comprising said protuberances



being fixedly attached together and fixedly attached to one of said reference discs; and

(e) means, associated with said central hub, for containing said discs and said spacer elements on said central hub.

4,149,069

SAFETY CIRCUIT FOR A DATA PROCESSING SYSTEM PRODUCING BINARY SIGNALS

Horst Strelow, Brunswick, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 19, 1977, Ser. No. 834,155

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1976, 2651314

Int. Cl.[2] G06F *11/08*

U.S. Cl. 235—307 **5 Claims**

1. A safety circuit for a clock actuated read-out from a data processing system wherein the safety circuit includes an amplifier means, an output transformer with its primary connected to the output of said amplifier, a rectifier connected to the secondary of said transformer, output means supplied from said rectifier wherein the improvement comprises a pair of micro computers (MR1, MR2) each having at least one data line (DL1, DL2) upon which similar binary signals from two micro computers (MR1, MR2) appear, a common pulse current supply (TG) connected to said micro computers, a pair of first pulse-edge triggered D-type flip-flops (K1, K10) respectively connected to receive on their D input terminals outputs of said micro computers and with their (Q) outputs connected to the reset inputs (R) of a second pair of pulse-edge triggered D-type flip-flops (K2, K20), and the input of said amplifier connected to the Q or Q outputs of one of said second pair of trigger circuit elements (K2, K20), synchronous clock pulses supplied from said pulse current supply (TG) to the C-inputs of said second pair of trigger circuit elements (K2, K20), the reset inputs (R) of said first pair trigger circuit elements (K1, K10) connected to an output of the pulse current supply (TG) which output delivers a reset signal (GL1, GL2, respectively), the D inputs of said second pair of flip-flops connected, respectively, to their Q outputs, a non-equivalent monitoring element (AD) which receives interrogation test pulses (TS) from said pulse current supply (TG), said monitoring element (AD) connected to the negated output Q of one of said second pair of trigger circuit elements (K2) and to the Q output of the other of said second pair of trigger circuit elements (K20), and said non-equivalent monitoring element (AD) producing output test pulses (TS) in the case of static as well as in the case of dynamic

non-equivalent signals for the purpose of maintaining the pulse current supply (TG) in the on state.

4,149,070

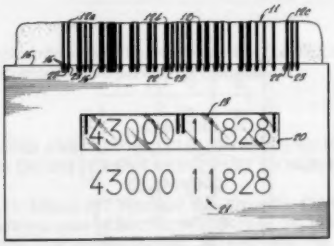
CODE SYMBOL INSPECTION ARRANGEMENT

Louis E. Pastorius, 529 W. Hillsdale, Inglewood, Calif. 90302

Continuation of Ser. No. 651,796, Jan. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 550,426, Feb. 18, 1975, abandoned. This application Feb. 8, 1978, Ser. No. 876,091

Int. Cl.[2] G06K *21/06*; G01B *3/04*; G09C *5/00*; B41F *3/82*

U.S. Cl. 235—495 **32 Claims**



1. In combination with an object having a code symbol made up of a plurality of parallel bars imprinted thereon, which bars are to have a predetermined spacing and predetermined widths, a device for inspecting said code symbol comprising,

a sheet member,

and means on said sheet member defining the borders of discrete viewable areas,

said areas being spaced apart at distances corresponding to the spacing required for at least some of said bars of said code symbol, each of said areas having a relatively wide portion and a relatively narrow portion,

each of said relatively wide portions having two opposed edges spaced apart the dimension of the maximum permissible width of a bar at the corresponding location in said code symbol, and each of said relatively narrow portions having two opposed edges spaced apart the dimension of the minimum permissible width of a bar at the corresponding location in said code symbol, said sheet member being adjacent said object and said code symbol such that at least some of said bars are visible at said viewable areas for determining if said bars have said predetermined spacing and predetermined widths.

4,149,071

LIGHT EMITTING ELEMENT DRIVE SYSTEM

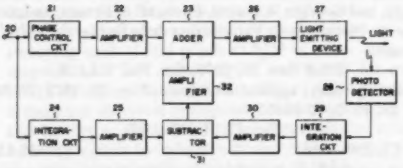
Yasuo Nagai, Machida; Takashi Touge, Senzoku; Matazou Yamagata, Kawasaki, and Noboru Sonetsuji, Yokohama, all of Japan, assignors to Fujitsu Limited, Japan

Filed May 3, 1977, Ser. No. 793,362

Claims priority, application Japan, May 25, 1976, 51-60769

Int. Cl.[2] H04B *9/00*; G02F *1/00*

U.S. Cl. 250—199 **33 Claims**



1. A system for driving a light emitting semiconductor element to achieve an optical output coinciding with a desired optical output, comprising:

means for receiving an input modulation signal corresponding to said desired optical output;

said light emitting semiconductor element having a thermal time constant which causes variation of said optical output so as to cause said optical output to differ from said desired optical output;

said system further comprising means for converting said input modulation signal into a signal corresponding to a composite signal composed of said input modulation signal and its integrated value so as to compensate for the variation of said optical output due to said thermal time constant of said light emitting semiconductor element, whereby to provide said optical output coinciding with said desired optical output.

4,149,072

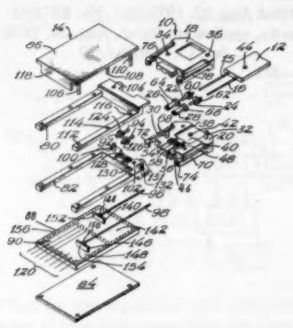
SYSTEM FOR FLAT RIBBON OPTICAL FIBER DATA COMMUNICATIONS LINK

Robert T. Smith, Woodbury, and Paul H. Binek, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 5, 1977, Ser. No. 822,270

Int. Cl.[2] H04B *9/00*

U.S. Cl. 250—199 **13 Claims**



1. A system for optically linking data processing equipment comprising

(a) a flat ribbon cable containing at least a pair of optical fibers supported in a flexible matrix,

(b) a cable connector adapted for optically terminating the fibers of the cable comprising a housing member having means for receiving and anchoring an end of the cable and members associated with the optical fibers contained within the cable, a front portion a which a mated connector may be joined to said housing and optically coupled the fiber ends within the housing to enable optical data signals to be coupled into and out of the mated connector and means for engagement of a corresponding front portion of a said mated connector, and optical fiber retaining means for positioning and anchoring said fibers within the housing member such that the ends of the fibers are accessible to be optically coupled at the front portion of the housing, and

(c) a terminal connector for mating with the cable connector and for providing an electro-optical interface with electronic data processing equipment, said terminal connector comprising

(i) another set of fiber retaining means for positioning and anchoring optical fibers terminating co-planar with one end thereof,

(ii) a second housing member for receiving and positioning therein said another set of fiber retaining means such that the ends of fibers retained therein may be optically

coupled with the fiber ends retained within the first recited connector, and

(iii) an electronic circuit means within the second housing member comprising

a transmitter section including at least one light source, and

a modulator-driver means for coupling an input logic data voltage signal to the light source such that the output of the light source varies corresponding to the input signal,

a receiver section comprising

at least one photodetector, and

a current to voltage converter and amplifier means for converting the detector output to an equivalent logic data signal.

4,149,073

SYSTEM AND METHOD FOR THE REAL-TIME CONVERSION OF TWO-COLOR INCOHERENT OR COHERENT LIGHT TO TWO-COLOR COHERENT LIGHT

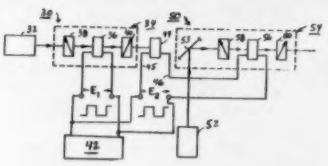
Nadav Bar-Chaim, Natanya; Ady Seidman, Tel Aviv, and Eliezer Wiener-Avnear, Beersheba, all of Israel, assignors to Ramot University Authority for Applied Research & Industrial Development Ltd., Neveh Avivim and Ben Gurion University of the Negev, Research & Development Authority, Beersheba, both of, Israel

Filed Aug. 23, 1977, Ser. No. 827,013

Claims priority, application Israel, Aug. 24, 1976, 50341

Int. Cl.[2] G01J *1/20*

U.S. Cl. 250—201 **14 Claims**



1. A system for the real-time conversion of an optical input having two colors into coherent light of two colors, comprising:

a first electrooptic device oriented to receive said optical input and effective to block or pass light therefrom in accordance with the magnitude of an electrical field applied thereto;

means for applying to said first electrooptic device a first periodic voltage varying between two levels for producing a first electrical field periodically varying between one magnitude effective to block one colour of the optical input and a second magnitude effective to block the other colour of the optical input;

a source of coherent light of two colors;

a second electrooptic device oriented to receive light from said coherent light source and effective to block or pass light therefrom in accordance with the magnitude of an electrical field applied thereto;

means for producing a second periodic voltage in synchronization with the first periodic voltage and varying between two levels for application to the second electrooptic device to produce a second electrical field periodically varying between one magnitude effective to block one color of the coherent light source and a second magnitude effective to block the other color of the coherent light source;

and a photoconductor switch receiving the light outputted from said first electrooptic device and effective, when light of either of said colors is received thereby, to gate the application of said second periodic voltage to the second electrooptic device.

4,149,074

DETECTOR FOR A SCANNING TRANSMISSION-TYPE ELECTRON MICROSCOPE

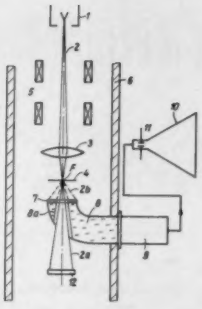
Reinhard Schliepe; Volker Rindfleisch; Karl-Heinz Muller, and Hans-Martin Thieringer, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 25, 1976, Ser. No. 717,652

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1975, 2542355

Int. Cl.[2] H01J *37/26*

U.S. Cl. 250—311 **2 Claims**



1. In a scanning transmission-type electron microscope including an annular-shaped first detector disposed concentrically with respect to the optical axis of the microscope behind a specimen along the microscope beam path, a second detector provided along said axis below said first detector for registering the intensity of a central ray cone of the beam of said microscope to obtain a bright-field image, and means for amplifying output signals generated by the first detector, the improvement comprising said first detector comprising a scintillation detector for detecting the dark-field image generated by a scatter-ray cone of the electron beam of the microscope, and said microscope including a photoelectron multiplier, coupled to said first detector and disposed outside the microscope beam, and a curved light guide, coupled to said first detector and said photoelectron multiplier, said light guide comprising a bundle of light-transmitting fibers and including a canal extending through said light guide along the microscope axis for permitting the passage of said central ray cone of said beam through said light guide to said second detector, said bundle of light-transmitting fibers being disposed about said canal.

4,149,075

METHODS AND DEVICES FOR DETECTING HARD RADIATION

Andrezej K. Drukier, Paris; Claude Valette, Villemoisson-sur-Orge, and Georges Waysand, Paris, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Filed Nov. 26, 1976, Ser. No. 745,115

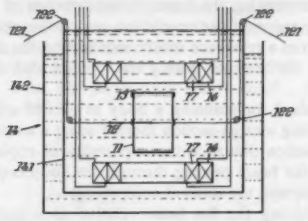
Claims priority, application France, Nov. 28, 1975, 75 36494; Nov. 28, 1975, 75 36495

Int. Cl.[2] G01T *1/00*

U.S. Cl. 250—336 **35 Claims**

1. A method of detecting electromagnetic or corpuscular radiation, wherein, in order to detect a radiation photon or particle, a homogeneous particle of superconducting material

of the first form is made to change from the metastable form of the superconducting state to the normal state by the action of



a photo-electron expelled by the impact of the photon or particle of radiation on the particle of material.

4,149,076

METHOD AND APPARATUS PRODUCING PLURAL IMAGES OF DIFFERENT CONTRAST RANGE BY X-RAY SCANNING

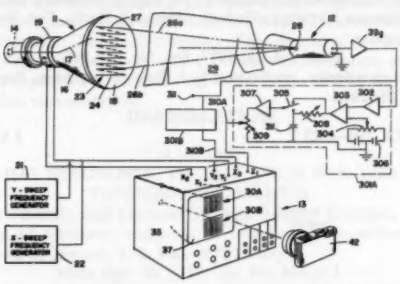
Richard D. Albert, 317 Hartford Rd., Danville, Calif. 94526

Continuation-in-part of Ser. No. 481,954, Jun. 24, 1974, Pat. No. 3,949,229. This application Jun. 24, 1977, Ser. No. 809,704

The portion of the term of this patent subsequent to Jun. 28, 1994, has been disclaimed.

Int. Cl.[2] G03D *41/16*

U.S. Cl. 250—402 **10 Claims**



1. Apparatus for simultaneously producing plural radiographic images of a subject comprising:

a scanning X-ray source having a broad target plate and an electron gun for directing an electron beam towards said target plate and having electron beam deflection means for sweeping said electron beam along said target plate in a first direction in response to a first sweep signal and a means for sweeping said electron beam in a second orthogonal direction in response to a second sweep signal to establish a moving origin point of X-rays on said target plate which sweeps through a raster pattern thereon,

an X-ray detector spaced apart from said source whereby said subject may be disposed therebetween, said detector having an active radiation-sensitive area which is substantially smaller than said raster pattern and having means for producing X-ray count signals in response to X-rays which impinge on said radiation-sensitive area,

at least one X-Y display device having a screen and means for producing a plurality of points of light at separate areas of said screen and having means for concurrently sweeping each of said points of light in a first direction in response to a first sweep signal and means for concurrently sweeping each of said points of light in a second orthogonal direction in response to a second sweep signal and having a plurality of signal terminals for receiving intensity signals to individually and concurrently control the intensities of each of said points of light,

a first sweep frequency generator coupled to said x-ray source and to said display device to supply said first sweep signal thereto,

a second sweep frequency generator coupled to said X-ray source and to said display device to supply said second sweep signal thereto, and

a plurality of signal-processing circuits, each being connected to said X-ray detector and to an associated separate one of said intensity signal terminals to supply said intensity signals to said associated one of said intensity signal terminals, said signal-processing circuits having means for concurrently establishing a different predetermined intensity signal range for each of said intensity signal terminals in response to the same set of output signals from said detector.

4,149,077

METHOD FOR SEPARATION AND ENRICHMENT OF LITHIUM ISOTOPES BY LASER

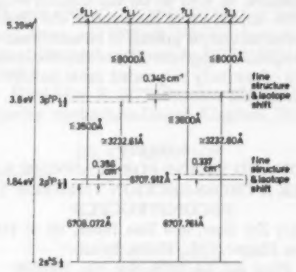
Mikio Yamashita, Tanashi, and Hiroshi Kashiwagi, Akishima, both of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Aug. 24, 1977, Ser. No. 827,255

Claims priority, application Japan, Aug. 27, 1976, 51/101626

Int. Cl.[2] B01J *1/10*; H01J *27/00*

U.S. Cl. 250—423 P **7 Claims**



1. A method for the separation and enrichment of lithium isotopes by use of laser light comprising the steps of irradiating lithium atomic beam with a first beam of laser light having a wavelength capable of exciting selectively a first isotope of lithium and incapable of exciting a second isotope of lithium, causing the lithium atomic beam which underwent the irradiation with the first laser light to be irradiated with a second beam of laser light having a wavelength capable of ionizing the first isotope and incapable of ionizing the second isotope, and separating the ionized first isotope from the non-ionized second isotope by using a mass-filter.

4,149,078

COUNTERWEIGHT COMPENSATION FOR AN X-RAY EXAMINATION APPARATUS

Alfred Hahn, Erlangen, and Hans P. Dornheim, Bubenreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 26, 1978, Ser. No. 872,604

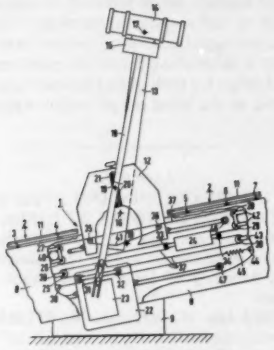
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1977, 2704528

Int. Cl.[2] G01N *21/34*

U.S. Cl. 250—439 R **3 Claims**

1. A counterweight compensation system for an X-ray examination apparatus, comprising a patient support tiltable about a horizontal axis, a sighting device which is displaceable along the length of the patient support, and a carrier column for the X-ray tube which is pivotably mounted about an additional horizontal axis on a pillow block displaceable along the length

of the patient support, characterized in that the weights of the sighting device (22), the pillow block (12), the carrier column (13) for the X-ray tube (14) and the torque of the carrier column are compensated via a single counterweight (24) suspended on a traction cable (37), such that traction cable, proceeding from a fixed point (38) on one side of the essentially parallel displacement paths of the apparatus parts to be compensated, is alternately guided about cable pulleys (25, 26, 27, 31, 33, 36) suspended on each of the respective apparatus parts to be compensated as well as on the counterweight and on fixed points (39, 40, 42, 43) at each end of the tiltable support, and in its further course, is guided to an additional fixed point (44) on the respective opposite side of the displacement paths via a plurality of similarly suspended cable pulleys (28, 29, 30, 32, 34, 35) along said course.



4,149,079

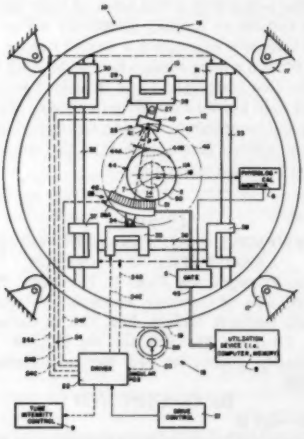
METHOD OF AND MEANS FOR SCANNING A BODY TO ENABLE A CROSS-SECTION THEREOF TO BE RECONSTRUCTED

Dan Ben-Zeev; Zvi Beer, and Dan Inbar, all of Haifa, Israel, assignors to Elscint, Ltd., Haifa, Israel

Filed Jul. 14, 1976, Ser. No. 705,250

Int. Cl.[2] A61B *6/02*; G01N *23/08*

U.S. Cl. 250—445 T **34 Claims**



1. In apparatus for calibrating a scanner of the type having a source for producing at least one pencil beam of penetrating radiation originating at essentially a point and passing through a cross-section to be reconstructed, a detector mounted in predetermined relationship to the source for measuring the intensity of the beam emerging from the cross-section, and means for rotating the source in a circular path coplanar with the cross-section, the improvement comprising means for periodically interrupting the beam during rotation of the source through a portion of the revolution, and means responsive to radiation from a reference source incident on the detector for calibrating the detector during the interval that the beam is interrupted.

6. A method for scanning a body as part of a process for reconstructing a cross-section thereof using a source of penetrating radiation that produces a plurality of coplanar beams defining a fan beam passing through the body coplanar with the cross-section, the method comprising:

(a) positioning the fan beam relative to a spatially fixed center at a first position;

(b) rotating the fan beam about the fixed center and measuring the intensity of each beam after it passes through the cross-section;

(c) repositioning the fan beam relative to the fixed center to a second position; and

(d) repeating step (b).

4,149,080

TOMOGRAPHIC APPARATUS FOR THE PRODUCTION OF TRANSVERSE TOMOGRAPHIC IMAGES

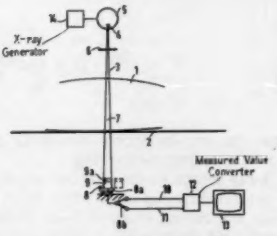
Rudolf Schittenhelm, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich & Berlin, Fed. Rep. of Germany

Filed Jul. 11, 1977, Ser. No. 814,556

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1976, 2642846

Int. Cl.[2] A61B *6/02*

U.S. Cl. 250—445 T **1 Claim**

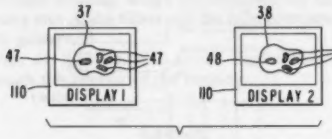


1. Tomographic X-ray apparatus for the production of transverse tomographic images of an exposure subject, comprising a radiation measuring arrangement including a radiation source which produces a fan-shaped primary radiation beam penetrating the exposure subject, the cross-sectional extent of this radiation beam, perpendicular to the layer plane, being equal to the layer thickness, and a radiation receiver which determines the radiation intensity behind the subject, and a measured value converter for transforming the signals delivered by the radiation receiver into a tomographic image, the radiation receiver comprising a number of individual detectors, characterized in that there are provided means for moving the radiation receiver forming one detector array into a second position in which it lies directly alongside the radiation beam and detects only the scatter radiation, and the measured value converter being operable for correcting the output signals of the radiation receiver which are formed when the radiation receiver lies in the radiation beam, said correction of these output signals being effected by the output signals formed in the second position.

4,149,081
REMOVAL OF SPECTRAL ARTIFACTS AND UTILIZATION OF SPECTRAL EFFECTS IN COMPUTERIZED TOMOGRAPHY

Edward J. Seppi, Mountain View, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Nov. 29, 1976, Ser. No. 745,709
Int. Cl.[2] A61B *6/02*; G01N *23/08*
U.S. Cl. 250—445 T **17 Claims**



2. A tomographic apparatus for graphically reproducing information from an object slice comprising:

at least one source of penetrating radiation positioned to direct said radiation at the object;

at least one detector responsive to radiation, each said detector positioned to receive said radiation after passage through the object for producing an output signal corresponding to said radiation at said detector;

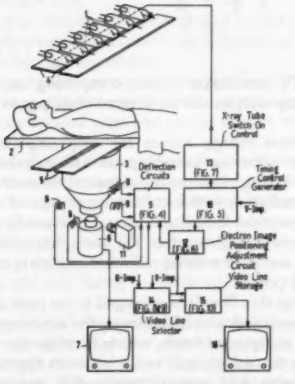
means coupled to said detector(s) for referencing said output signals to a series of test data derived from actual test measurements of objects having known attenuation characteristics, said referencing means producing intermediate signals; and

means for reconstructing said intermediate signals into at least two separate facsimiles, each of which is representative of a different distribution of the degree of attenuation within said object, wherein said reconstruction means comprises a non-reordering convolution and backprojection reconstructor.

4,149,082
X-RAY DIAGNOSTIC INSTALLATION FOR X-RAY TOMOGRAPHIC IMAGES

Joerg Haendle, and Hartmut Sklebitz, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 30, 1977, Ser. No. 866,017
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1977, 2712320
Int. Cl.[2] A61B *6/02*
U.S. Cl. 250—445 T **10 Claims**

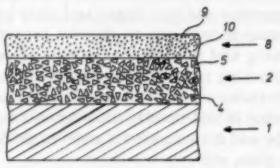


1. A diagnostic installation for producing tomographic images, comprising a support, radiation source means at one side of the support for producing a beam penetrating a patient on the support, an image detection installation on the opposite side of the support having an image field for detecting the transmitted beam, and scanning means for shifting the beam and the image field of the image detection installation in mutually opposite directions such that sharply defined images are produced only for those details lying in a selected longitudinal layer of the body, said source means comprising a number of individually actuatable sources capable of being activated one at a time, said scanning means comprising a control generator controlling said sources for activation of the sources one at a time in step-by-step fashion for shifting said beam, said image detection installation comprising an image intensifier having a deflectable image, and said scanning means further comprising image deflection means operable for shifting the image field of the image intensifier oppositely to the shifting of the beam, and image processing means for processing the output image of the image intensifier for tomographic image reproduction.

4,149,083
RADIOGRAPHIC INTENSIFYING SCREENS

André R. Suys, Hove, and Willy K. Van Landeghem, Sint-Gillis-Waas, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Mar. 8, 1977, Ser. No. 775,520
Claims priority, application United Kingdom, Mar. 18, 1976, 10973/76
Int. Cl.[2] G01J *1/58*
U.S. Cl. 250—486 **33 Claims**

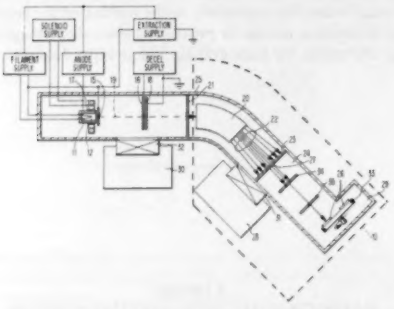


1. A radiographic combination comprising at least one photographic silver halide emulsion material and at least one X-ray image intensifying screen, said screen comprising (1) a layer containing fluorescent light-emitting phosphor particles including at least one rare-earth metal compound and (2) a light-diffusing layer which contains numerous discrete light-scattering volumes of at least one substance distributed at random in a binder medium, said layer being located so that fluorescent light of said phosphor particles can penetrate therethrough to the outside of said screen, wherein (i) the light-diffusing layer is composed so that it does not reduce the fluorescent light-emission by more than 50 percent as compared with an X-ray exposure in the absence of such light-diffusing layer, (ii) the light-diffusing layer is composed so that the image resolution of the silver halide emulsion material expressed in terms of modulation transfer of 1 line pair per mm is reduced by not more than 10 percent as compared to the image resolution obtainable in the absence of such light-diffusing layer under identical X-ray exposure conditions, and (iii) the substance representing said volumes have a mean size more than 10 μm but not larger than 20 μm and an index of refraction which differs by at least 0.3 from the index of refraction of the binder medium in which said volumes are distributed.

4,149,084
APPARATUS FOR MAINTAINING ION BOMBARDMENT BEAM UNDER IMPROVED VACUUM CONDITION

Herbert L. Arndt, deceased, late of Wappingers Falls, N.Y.; by Margaret L. Arndt, administratrix, Catskill, N.Y.; John H. Keller, Newburgh, N.Y.; Charles M. McKenna, Fishkill, N.Y., and James R. Winnard, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1977, Ser. No. 847,645
Int. Cl.[2] G01N *23/00*
U.S. Cl. 250—492 A **5 Claims**



1. In apparatus for bombarding a target with a beam of selected ions,

a mass separator adapted to provide said selected ions with a trajectory along a selected axis, said target being positioned along said selected axis,

a housing extending from said mass separator to said target to enclose said axis and target within a chamber,

a plate within said chamber traversing said axis between said mass separator and said target, said plate having an opening therein at said axis to thereby permit an ion beam comprising said selected ions to pass toward said target while blocking ions with other trajectories,

vacuum drawing means connected to said chamber through an opening in said housing crossing said separation plate, whereby said drawing means removes gas from both sides of said plate, and

an annular beam defining member positioned across said axis between said separation plate and target and spaced from said housing, said member having an opening formed therein at said axis to limit said ion beam passing toward said target.

4,149,085
AUTOMATIC OVERLAY MEASUREMENTS USING AN ELECTRONIC BEAM SYSTEM AS A MEASUREMENT TOOL

Donald E. Davis, Wappingers Falls; Edward V. Weber, Poughkeepsie; Maurice C. Williams, Wappingers Falls, and Ollie C. Woodard, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

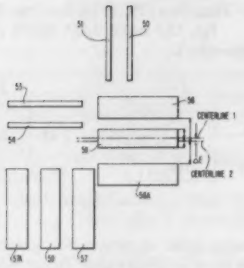
Filed Jan. 16, 1978, Ser. No. 869,972
Int. Cl.[2] H01J *37/00*
U.S. Cl. 250—492 A **8 Claims**

1. A method of verifying the position of a second pattern in a layer on a target with respect to a first pattern previously established in another layer on the target comprising the steps of

providing the first pattern on the target at a predetermined location which is relative to registration indicia on the target;

providing a second pattern on the target at a location above said first pattern and at a location relative to said registration indicia; and

measuring with an electron beam system a distance between the second pattern and the first pattern in at least one

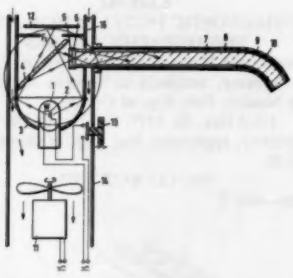


direction by bombarding the target with electrons and detecting electrons backscattered from said patterns whereby the measured distance is proportional to overlay error and can be utilized to calculate overlay error for the patterns on the target.

4,149,086
UV IRRADIATION DEVICE

Guenther Nath, Speyererstrasse 21, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 771,137, Feb. 23, 1977, abandoned. This application Jun. 16, 1978, Ser. No. 916,419
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1976, 2607249; Nov. 2, 1976, 2650209
Int. Cl.[2] G01J *1/00*
U.S. Cl. 250—504 **15 Claims**



1. An UV irradiation device comprising an incandescent filament lamp with an electrical rated input power of at least 15 Watts,

an electrical energy source for supplying the lamp, in a manner allowing switching on and switching off, with such a voltage that the incandescent filament in operation emits radiation with a color temperature of at least 3150° K., an optical focussing means, which collects the radiation from the filament of the lamp in a solid angle of at least 6 sterad of emitted radiation to a beam converging to a focal point,

a dielectric thin film filter arranged in the path of the convergent beam and which divides up the convergent beam into a first component beam, which is relatively rich in radiation in the wavelength range between approximately 330 nanometer and approximately 400 nanometer (UVA range), and a second component beam, which is relatively rich in visible and infrared radiation, and the first and the second component beams converge at a first and a second component beam focus respectively,

an elongated light guide which is transparent for the UVA radiation, having a light exit end and a light entrance end, which has an effective numerical aperture above 0.34 and is arranged at the first component beam focus in such a manner that the first component beam enters the light guide, an optical filter arrangement, the arranged in the path of the first component beam, for further reduction of the visible and infrared radiation still comprised in the first component beam,

a light-tight housing, which encompasses the lamp, the focussing means, the filters and the light entrance end of the light guide, and

a device for producing a forced cooling air circulation through the interior of the housing.

4,149,087

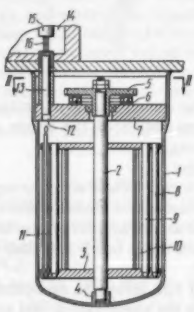
DRUM OF STORING FUEL ASSEMBLIES OF NUCLEAR REACTOR

Lev N. Artemiev, ulitsa Berezovskaya 89, kv. 94; Vladimir I. Batjukov, ulitsa Prygunova, 9, kv. 29, and Alexandr I. Fadeev, ulitsa Engelsa, 21, kv. 46, all of Gorky, U.S.S.R.

Filed May 13, 1977, Ser. No. 796,603

Int. Cl.[2] G21F 5/00

U.S. Cl. 250—507 **4 Claims**



1. A recharging device for a nuclear reactor including a drum, a recharging box having a recharging mechanism and a recharging channel for connecting the drum to the recharging box, said recharging device comprising:

a drum body;

a holder pivotably mounted in said drum body and rotatable about a holder axis;

stationary axial tubular sockets arranged in said holder in a number of rows, concentrically with the axis of the holder for receiving fuel assemblies;

a recharging channel having pipes for recharging fuel assemblies abutting said drum body and arranged coaxially with said tubular sockets over one socket in each row;

a recharging box;

means for connecting the recharging box to said drum body so that the box communicates with said drum body through said pipes of said recharging channel, the recharging box including a recharging mechanism arranged in said recharging box for recharging of fuel assemblies and having a grip for holding fuel assemblies during recharging, the grip being movable to described a trajectory;

said tubular sockets being so arranged in rows in said holder that the axis of at least one of said sockets in each row intersects with the trajectory described by said grip of said recharging mechanism in the course of its movement;

said pipes of said recharging channel, abutting said drum body at points of intersection between a socket axis and a point on the trajectory described by said grip of said recharging mechanism; and

means for rotating said holder to position different tubular sockets in alignment with said pipes.

4,149,088

ELECTRO-OPTICAL CIRCUITS AND MANUFACTURING

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

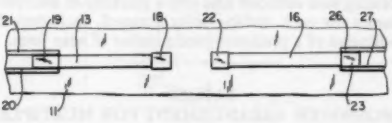
Continuation-in-part of Ser. No. 555,794, Mar. 6, 1975, Pat. No. 4,005,312, and Ser. No. 425,618, Dec. 17, 1973, abandoned, and Ser. No. 413,983, Nov. 8, 1973, abandoned, which is a continuation-in-part of Ser. No. 849,115, Aug. 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 422,875, Nov. 25, 1964, Pat. No. 3,461,347, said Ser. No. 425,618, is a continuation-in-part of Ser. No. 115,208, Feb. 16, 1971, Pat. No. 3,801,366, which is a continuation-in-part of said Ser. No. 849,115.

This application Jan. 21, 1977, Ser. No. 761,312

The portion of the term of this patent subsequent to Jan. 25, 1994, has been disclaimed.

Int. Cl.[2] G02B 27/00

U.S. Cl. 250—551 **10 Claims**



1. An electro-optical circuit defined by a composite structure comprising in combination:

a substrate,

a laminate to said substrate including a layer of light transmitting material bonded thereto and defining a light pipe capable of transmitting light along its length,

electro-optical transducing means secured to said composite structure in optical coupling relationship with said light transmitting material,

electrical conducting means secured to said electro-optical transducing means and said composite structure,

means for electrically energizing said electro-optical transducing means and

means for generating and transmitting light energy along said light transmitting material for one way communication between said electro-optical transducing means and said light transmitting material.

4,149,089

ELECTRO-OPTICAL SCANNER FOR GENERATING DIGITAL FLAW DATA

Jerome M. Idelsohn; Paul A. Mueller, both of Detroit; M. David Freedman, Southfield, all of Mich., and Raymond T. Hebert, Saratoga, Calif., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 638,116, Dec. 5, 1975, abandoned. This application Jul. 22, 1977, Ser. No. 818,252

Int. Cl.[2] G01N 21/32

U.S. Cl. 250—563 **12 Claims**

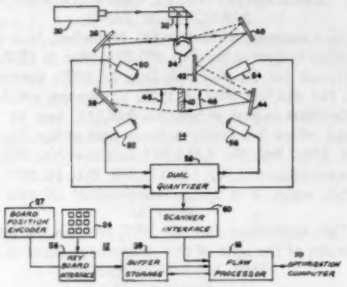
1. An electro-optical scanner for generating digital data indicative of the location and size of flaws in a piece of raw material comprising:

optical scanner means line scanning at least the opposite surfaces of the material in an alternating sequence for generating analog scan data having frequency components indicative of the characteristics of each scanned surface;

means quantizing said analog data with respect to said frequency components for separating the data indicative of narrow flaws from all other flaws detected on the surface of the scanned material, said means further separately converting the analog data indicative of narrow flaws and the analog data indicative of all other flaws into Hi-Pass and Lo-Pass digital data respectively, said Hi-Pass and

Lo-Pass digital data being indicative of the location of respective flaws; and

interface means encoding said Hi-Pass and Lo-Pass digital data in a predetermined multi-bit data byte format for forming said encoded data into a plurality of discrete data frames for each surface being scanned, each data frame indicative of a predetermined number of scan lines.

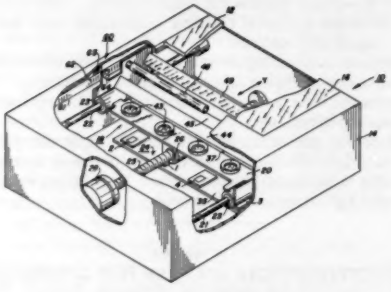


4,149,090

CROSSOVER ARRANGEMENT FOR MULTIPLE SCANNING ARRAYS

Martin A. Agulnek, Brighton, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 2, 1977, Ser. No. 793,001
Int. Cl.[2] G06K *7/10*
U.S. Cl. 250—566 **4 Claims**



1. In an apparatus for scanning an image line by line to produce data representative of the image scanned, the improvement comprising:

a movable carriage;

at least two arrays, each of said arrays comprising a plurality of discrete photosensitive elements arranged in succession along the linear axis of said array, the length of the viewing area of each array being less than the width of the image scanned;

means supporting said arrays on said carriage for scanning said image with the linear axis of said arrays extending in a direction substantially perpendicular to the direction of scanning movement of said carriage;

said arrays being supported so that said array viewing areas overlap whereby to provide a composite array viewing area having a length at least equal to the width of the image scanned;

means for actuating said carriage and said arrays to move said carriage and scan said image; and

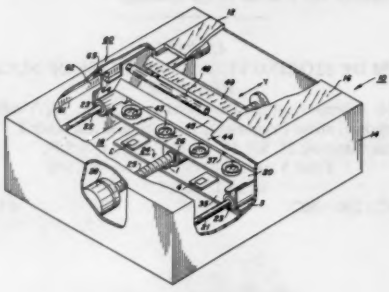
readout means for reading out data from said arrays in succession one line at a time, said readout means including crossover means for crossing over from one array to the next succeeding array within the overlapping portion of said array viewing areas on a random basis, said crossover means being adapted to change the crossover point between said arrays with each succeeding line.

4,149,091

SCANNING APPARATUS

Peter A. Crean; Pierre A. Lavallee, both of Penfield, and Martin A. Agulnek, Brighton, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 2, 1977, Ser. No. 793,202
Int. Cl.[2] G06K *7/10*
U.S. Cl. 250—566 **9 Claims**



1. In an apparatus for scanning an image line by line to produce data representative of the image scanned, the improvement comprising:

a movable carriage;

at least two arrays, each of said arrays comprising a plurality of discrete photosensitive elements arranged in succession along the linear axis of said array, the length of the viewing area of each array being less than the width of the image scanned;

means supporting said arrays on said carriage for scanning said image with the linear axis of said arrays extending in a direction substantially perpendicular to the direction of scanning movement of said carriage;

said arrays being supported so that said array viewing areas overlap whereby to provide a composite array viewing area having a length at least equal to the width of the image scanned;

means for actuating said carriage and said arrays to move said carriage and scan said image; and

readout means for reading out data from said arrays in succession, said readout means crossing over from one array to the next succeeding array within the overlapping portion of said array viewing areas.

4,149,092

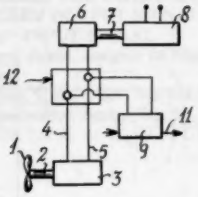
SYSTEM FOR CONVERTING THE RANDOMLY VARIABLE ENERGY OF A NATURAL FLUID

Pierre Cros, Paris, France, assignor to Spie-Batignolles and Societe Generale de Techniques et d'Etudes, both of Puteaux, France

Filed Apr. 28, 1977, Ser. No. 791,878
Claims priority, application France, May 11, 1976, 76 14151
Int. Cl.[2] F03B *13/10*; B63H *13/00*
U.S. Cl. 290—54 **19 Claims**

1. A system for converting the variable energy of a natural fluid in motion such as the water of a watercourse or atmospheric air into energy which has a regulated level, comprising at least one rotary transducer immersed in the fluid and at least one regulated-level power generator actuated by means of the transducer, wherein said system comprises an emitter having a rotary hydraulic displacement pump keyed on each transducer, at least one receiver having a rotary hydraulic displace-

ment motor keyed on each power generator, a hydraulic circuit for an auxiliary liquid which connects all the emitters to all the receivers, a device for dissipating the energy of the auxiliary liquid which is connected as a shunt off the hydraulic circuit, means for controlling the rate of flow of auxiliary fluid admitted into each of the shunt-connected dissipators, regulating means for regulating the circulation of the auxiliary liquid as a function of the random variations in energy of the natural fluid and safety means for withdrawing at least a part of the system from service when certain critical quantities exceed



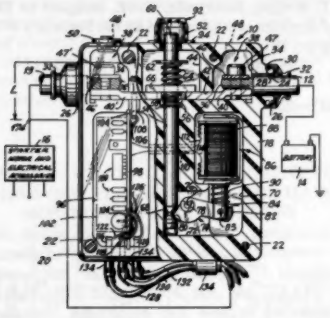
predetermined values, wherein the energy dissipator comprises means for converting the hydraulic energy of the auxiliary liquid to thermal energy and a heat exchanger for removing said thermal energy, and wherein the means for controlling the flow rate of auxiliary liquid admitted into an energy dissipator comprise a device having control valves which are calibrated in order to open automatically when the position of the means for adjusting the receivers which are connected to said dissipator is such that the entire flow of auxiliary liquid delivered by the emitters cannot flow through the receivers.

4,149,093

BATTERY PROTECTION DEVICE

Frank P. D'Alessio, Franklin Lakes, and Warren Andrews, Upper Saddle River, both of N.Y., assignors to U.S. Autotronics, Matawan, N.J.

Filed Aug. 31, 1977, Ser. No. 829,398
Int. Cl.[2] H02H 7/18
U.S. Cl. 307—10 BP **20 Claims**



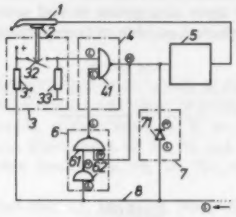
1. A device for protecting a battery which provides starting power to a motor and auxiliary power to a load normally powered by a generator driven by said motor, comprising mechanical switch means for connection intermediate said battery and load; first circuit means for detecting current flowing from said battery to said load and integrating a signal representative of said detected current; second circuit means for producing a control output signal when the product of said integration reaches a predetermined level; and electrical switch means operatively coupled to said mechanical switch means and to said second circuit means for opening said mechanical switch means in response to said control output signal, said first circuit means being adapted for operative coupling to said generator for disabling the production of said control output signal when said generator is operative.

4,149,094

DENTAL APPARATUS HAVING A PLURALITY OF DENTAL INSTRUMENTS

Hermann Gmeinder, Biberach, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Jul. 28, 1977, Ser. No. 820,025
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1976, 2636957
Int. Cl.[2] H02J 13/00
U.S. Cl. 307—12 **4 Claims**



1. Dental apparatus comprising:
a plurality of dental instruments;
holding means for said instruments;
a signal transmitter associated with each instrument and operable upon extraction of the respective instrument from its holding means to transmit an extraction signal;
a logic circuit associated with each instrument and connected to the signal transmitter associated with the respective instrument, and connected to the logic circuits associated with the other instruments, each logic circuit being operable to generate an actuation signal for the respective instrument and a blocking signal for supply to the other logic circuits when an extraction signal is transmitted in respect of the respective instrument and when no blocking signal is supplied by any of the other logic circuits;
a single connecting line connected to said logic circuits for transmitting blocking signals there between;
and a logic identification circuit associated with each logic circuit, each logic identification circuit being connected to said connecting line and to an input and to an output of the associated logic circuit, and each logic identification circuit being operable to transmit a blocking signal which may be present in the connecting line to the input of the associated logic circuit when an actuating signal is absent from the output of the logic circuit.

4,149,095

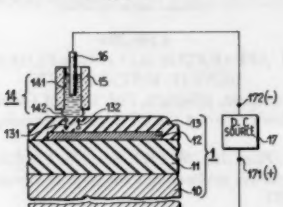
MONOLITHIC STRUCTURE FOR STORING ELECTRICAL CHARGES

Raymond Poirier, and Nicolas Szydlo, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 8, 1976, Ser. No. 675,192
Claims priority, application France, Apr. 11, 1975, 75 11310
Int. Cl.[2] H01G 7/02
U.S. Cl. 307—400 ET **9 Claims**

1. In a semiconductor device having a semiconductor substrate and a group of discrete components and integrated circuits, the improvement consisting of an electret integrated in said device, comprising:
a first layer laid down on said semiconductor substrate of said device and made of a dielectric incapable of transporting ions;
a second layer contiguous to said first layer and made of

electret material capable of storing 500 nanocoulombs per cm^2 of electronic charge; and



at least a third layer contiguous to said second layer and made of a dielectric capable of transporting ions.

4,149,096

SWITCHING MATRIX WITH CONNECTION MODULES

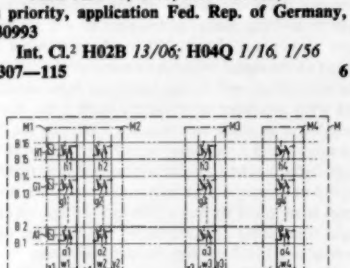
Franz Holzner, Wolfratshausen; Ulrich Schmid, and Kurt Strittmatter, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 30, 1977, Ser. No. 811,873

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2630993

Int. Cl.[2] H02B *13/06*; H04Q *1/16, 1/56*

U.S. Cl. 307—115 **6 Claims**



1. In a switching matrix provided with connection modules, for the connection of peripherally arranged electrical measuring devices, over selectable lines of a line group specifically associated with a matrix, to the peripheral terminals of specimens to be measured, such as electrical components, circuit boards, assemblies, communication devices and the like, wherein the connection modules are designed with two poles which may be rendered operative by controllable switching means, and over each of their poles provide access from such a terminal to separate line subgroups, from which a line is then selected over additional controllable switching means, the combination of each pole of a connection module being selectively connectable to a respective peripheral terminal of a specimen or a device over such first mentioned controllable switching means, and further controllable switching means for selectively connecting the first pole of a connection module to the second pole thereof at the matrix side of the first mentioned switching means associated with such second pole, in the event said last mentioned switching means is open.

4,149,097

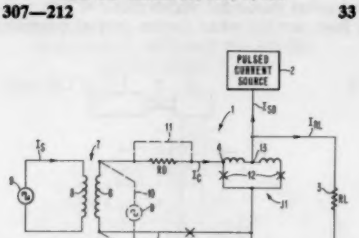
WAVEFORM TRANSITION SENSITIVE JOSEPHSON JUNCTION CIRCUIT HAVING SENSE BUS AND LOGIC APPLICATIONS

Sadeg M. Faris, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1977, Ser. No. 865,815

Int. Cl.[2] H03K *19/195, 5/153*

U.S. Cl. 307—212 **33 Claims**



1. A waveform transition sensitive circuit comprising:

a device capable of carrying Josephson current,

a current source connected to said device to provide current flow therein of a given polarity,

a utilization circuit connected to said device,

at least a source of current pulses each of said pulses undergoing at least a pair of waveform transitions, and

means connected to said device and said at least a source of current pulses responsive to said at least a pair of waveform transitions for generating at least transition currents of said given polarity and of a polarity opposite to said given polarity in said device to switch it and deliver said current to said utilization device when said current in said device and a transition current of said at least transition currents are of the same polarity.

4,149,098

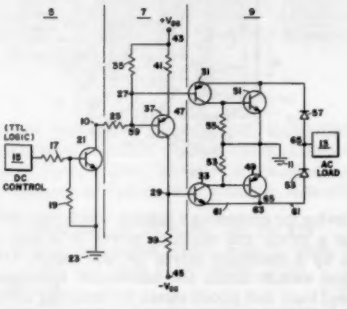
A. C. SWITCHING SYSTEM

Malcolm T. Wright, Sunnyvale, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 20, 1976, Ser. No. 688,444

Int. Cl.[2] H03K *17/00*

U.S. Cl. 307—255 **7 Claims**



1. An A.C. switch which comprises:

(a) a potential switch stage for receiving a control signal;

(b) an output stage electrically coupled to an A.C. power supply; and

(c) a phase inverter electrically coupled between said potential switch stage and said output stage, said phase inverter including:

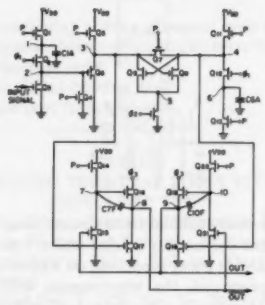
(i) a first impressed voltage;
(ii) a second impressed voltage;
(iii) said first impressed voltage being positive and said second impressed voltage being negative; and
(iv) said first impressed voltage being greater in positive value than any positive-going cycle of said A.C. power supply and said second impressed voltage being greater in negative value than any negative-going cycle of said A.C. power supply.

4,149,099

AMPLIFIER CIRCUIT FOR OBTAINING TRUE AND COMPLEMENTARY OUTPUT SIGNALS FROM AN INPUT SIGNAL

Akira Nagami, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1977, Ser. No. 831,820
Claims priority, application Japan, Sep. 10, 1976, 51/109169
Int. Cl.² H03K *3/286, 3/353, 5/20;* G11C *8/00*
U.S. Cl. 307—279 **12 Claims**



1. A transistor circuit comprising first and second nodes, a pair of cross-coupled transistors connected to said first and second nodes, means for operatively charging said first and second nodes with a first level, input means, including an input terminal, for determining the potential of said first node in accordance with an input signal applied to said input terminal, capacitance means, and switching means, arranged between said capacitance means and said second node for partially transferring electric charge stored in said second node at said first level into said capacitance means to change the potential of said second node to a second level lower than said first level in absolute value.

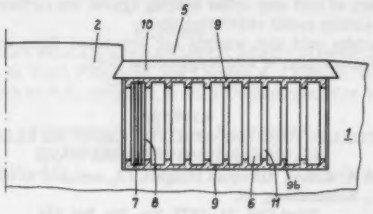
4,149,100

EXCITATION WINDING ARRANGEMENT FOR A SYNCHRONOUS ELECTRIC MACHINE HAVING A ROTOR WITH SALIENT POLES

Franz Spirk, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 539,952, Jan. 10, 1975, abandoned. This application Sep. 8, 1976, Ser. No. 721,376
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1974, 7403915[U]
Int. Cl.² H02K *1/32*
U.S. Cl. 310—65 **3 Claims**

1. An improved electric synchronous machine having an excitation winding and a rotor with shoeless, salient poles defining pole gaps and slot wedges for holding the excitation winding in the pole gaps, wherein the improvement comprises:
an excitation winding arrangement comprising:
a plurality of coils defining the excitation winding, each of said coils being wound from a flat conductor so that the surfaces of said flat conductor extend parallel to the walls of the corresponding pole; and a comb structure of insulating material arranged in the pole gap at the pole gap bottom to space the turns of said flat conductor and to space said flat conductor from said pole gap bottom and a further comb structure of insulating material arranged



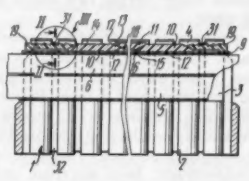
beneath the slot wedge to space the turns of said flat conductor and to space said flat conductor from said slot wedge.

4,149,101

ARRANGEMENT FOR LOCKING SLOT WEDGES RETAINING ELECTRIC WINDINGS

Albert Z. Lesokhin, ulitsa Chekhova, 8, kv. 22; Mikhail R. Semenov, ulitsa Kubinskaya, 66, kv. 35, and Evelina A. Daikhovskaya, ulitsa Basseinaya, 85, kv. 202, all of Leningrad, U.S.S.R.

Filed May 12, 1977, Ser. No. 796,065
Int. Cl.² H02K *3/48*
U.S. Cl. 310—214 **9 Claims**



1. In an magnetic core of an electric machine, having longitudinal slots arranged around the periphery thereof and provided with longitudinal grooves on the side walls near the top of the slots, said slots including a winding disposed therein, a plurality of radial ventilating ducts extending across said longitudinal slots, a plurality of slot wedges located end-to-end in the top portions of said longitudinal slots above said winding to retain said winding from displacement within said slots, and an arrangement for locking said slots wedges, disposed in the end portions of each of said longitudinal slots; said arrangement comprising:
locking wedges disposed in said longitudinal slot and contacting the extreme slot wedges and having lugs on the side portions thereof, engaging said grooves of said longitudinal slot, and teeth on the surfaces parallel to the bottom of said longitudinal slots, defined by an inclined plane facing the central portion of said longitudinal slot from the ends thereof, and a plane perpendicular to the axis of said core;
stop collars, disposed at the points of the intersection of said longitudinal slots and the extreme radial ventilating ducts, embracing said locking wedges, said stop collars shaped congruent to said locking wedge within a tooth portion thereof, the portions of said stop collars facing the winding being in tight contact with the mating portions of said locking wedge and the inner side portions of said stop collar being spaced from the lateral sides of said locking wedge with side clearances formed therebetween, said side clearances enabling said locking wedge to be urged in said longitudinal slot along said grooves toward the central portion of said longitudinal slot from the ends thereof,

one end face of said stop collar contacting the surface of said tooth of said locking wedge, defined by the plane perpendicular to the axis of said core, and the other end face of said stop collar bearing against the surface of said extreme radial ventilating ducts;

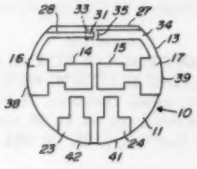
whereby said slot wedges are prevented from any axial displacement in said longitudinal slots.

4,149,102

PIEZOELECTRIC MONOLITHIC CRYSTAL ELEMENT HAVING IMPROVED RESPONSE

Robert A. Kellen, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1977, Ser. No. 846,851
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—320 **1 Claim**



1. A piezoelectric resonating device including:

(a) a piezoelectric wafer having two major surfaces and a surrounding edge;

(b) a pair of spaced apart electrodes on each of said two major surfaces, the electrodes of each of said pair is on opposite ones of said major surfaces being approximately co-extensive and providing a main frequency mode of operation including certain spurious modes of operation;

(c) a pair of electrically conducting tabs fixedly positioned in overlying relationship on each of said major surfaces and extending, respectively, from electrical connection with respective ones of said electrodes on each of said respective major surfaces outwardly to the surrounding edge of the major surface, and conducting tabs of opposite ones of said major surfaces extending outwardly to the surrounding edge in different directions whereby substantially no portions thereof are directly opposite each other;

(d) a pair of pseudo tabs positioned in overlying relationship on each of said major surfaces approximately coextensive with and directly opposite, respectively, each of said conducting tabs, said pseudo tabs being spaced from said electrodes a distance sufficient to allow propagation of the spurious modes between said conducting tabs and said pseudo tabs toward the outer edge of said wafer while decoupling said substantial propagation of the main mode, and

(e) conducting means for connecting cooperating ones of said connecting tabs and said pseudo tabs on opposite ones of said major surfaces, comprising:

a capacitor means including first and second capacitor plates, one on each one of said two major surfaces, said first and second capacitor plates comprise first and second metallic films formed on respective ones of said surfaces, the couplings between the first and second capacitor plates and the spaced apart electrodes comprise first and second connecting metallic films, respectively, formed on said surfaces,

said first capacitor plate being coupled to one of said spaced apart electrodes and the second capacitor plate being coupled to the other one of said pair of electrodes,

said capacitor means having main mode energy associated therewith and being disposed within the main mode energy coupling distance of said spaced apart electrodes,

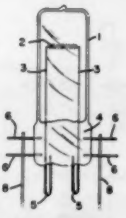
and means for preventing main mode trapped energy of said capacitor means from coupling into the resonating system of said spaced apart electrodes comprising third and fourth metallic films formed on the opposite surfaces of said piezoelectric plate and directly opposite to the first and second connecting metallic films, respectively, to the first and second capacitor plates, respectively, the ends of said third and fourth metallic films terminating close to said first and second capacitor plates, respectively, but not contacting them.

4,149,103

INCANDESCENT LAMP HAVING EMBEDDED SUPPORT MEANS

Paul E. Gates, Danvers, and Stephen F. Kimball, Georgetown, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Continuation-in-part of Ser. No. 702,659, Jul. 7, 1976. This application Jan. 27, 1978, Ser. No. 872,804
Int. Cl.[2] H01K *1/14*
U.S. Cl. 313—315 **2 Claims**



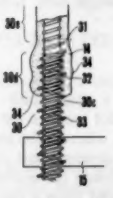
1. In a single-ended tubular incandescent lamp containing a tungsten filament and having a press seal at one end thereof, the tungsten filament being supported on lead-in wires that are sealed in the press seal, the improvement which comprises support means at each side of the press seal, said support means being independent of said lead-in wires, each support means being embedded in the press seal and extending from the longitudinal edge thereof substantially perpendicular to the envelope axis, the support means being substantially coplanar with the press seal, the support means capable of being fastened, such as by welding or brazing, to a support rod substantially coplanar with the support means and at a plurality of points thereof that run lengthwise with the lamp.

4,149,104

METHOD OF MANUFACTURING A COIL HEATER OF AN INDIRECTLY-HEATED TYPE CATHODE ELECTRODE OF ELECTRONIC TUBES

Norihisa Yoshimori, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 15, 1977, Ser. No. 860,853
Claims priority, application Japan, Dec. 15, 1976, 51/167255[U]
Int. Cl.[2] H05B *1/00*
U.S. Cl. 313—340 **5 Claims**



1. A method of manufacturing a coil heater of an indirectly-heated type cathode electrode of an electronic tube of the type wherein said coil heater comprises a main portion and leg

portions connected to said main portion and is adapted to be contained in a cathode sleeve, said method comprising the steps of winding a length of heater wire about a core in a given direction over a first distance to form a single-layer first coil;

winding said heater wire about said first coil in the opposite direction over a second distance to form a double-layer second coil;

winding said heater wire about said second coil and then about said core over a third distance and in said given direction to form a triple-layer third coil and additional single layer coil;

winding said heater wire about said additional single-layer core over a fourth distance and in said opposite direction to form an additional double-layer coil;

winding said heater wire about said additional double-layer coil over said fourth distance in said given direction to form an additional triple-layer coil;

continuously baking the resulting coils;

severing said coils at the centers of said triple-layer coils;

shaping said additional single-layer coil into said main portion;

applying an insulating coating onto said main portion and a part contiguous thereto of said triple-layer third and additional triple-layer coils;

firing said insulating coating; and

removing said core from said coils.

4,149,105

FILAMENT-FIXING TERMINAL FOR A FLUORESCENT INDICATOR TUBE

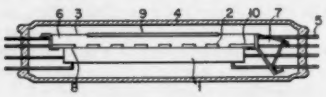
Shikou Hirooka, Hyogo; Tetsuyoshi Mitsusono, Himeji; Takeshi Hashimoto, Hyogo, and Katsuhiro Kusumoto, Himeji, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 3, 1976, Ser. No. 747,312

Claims priority, application Japan, Dec. 5, 1975, 50-164634[U]; Dec. 24, 1975, 50-175755[U]

Int. Cl.[2] H01J *1/18, 63/02, 63/06*

U.S. Cl. 313—496 **4 Claims**



1. A fluorescent indication tube comprising:

(a) a substrate;

(b) a fluorescent display section including a plurality of anode segments arranged in a predetermined pattern on said substrate;

(c) a tension cathode filament stretched above said display section;

(d) a cathode filament fixing spring terminal including:

(i) a fixing portion disposed on one side of said substrate;

(ii) a spring-like plate member, one end of which is resiliently urged toward the fixing portion by said tension cathode filament and which has a flat part adapted to secure one end of the cathode filament and formed by bending the spring plate member away from that part of the substrate on which display segments are formed to produce a smooth edge joining said flat part to the rest of said plate member, said plate member having a surface extending in a plane which intersects the direction in which said filament is stretched so as to apply a force to stretch said filament;

(e) a cathode filament rigid terminal disposed on the other side of the substrate and the other end of the cathode filament for fixing said other end of said filament and

(f) cover means hermetically sealed to enclose the fluorescent display section, the cathode filament and the spring terminal and having a transparent section for viewing said display section from outside.

4,149,106

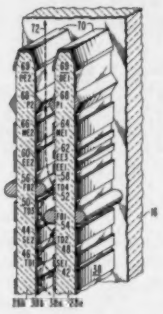
ELECTRON MULTIPLIER OUTPUT ELECTRON OPTICS

David A. de Wolf, Princeton, and Carmen A. Catanese, Rocky Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 8, 1977, Ser. No. 822,670

Int. Cl.[2] H01J *43/10, 43/18*

U.S. Cl. 313—400 **10 Claims**



1. An electron multiplier comprising:

two spaced parallel substrates of electrically insulative material;

a cathode at one end of the substrate;

a plurality of parallel dynodes on the opposed surfaces of the substrates, the dynodes on one surface being in a staggered relation with respect to the dynodes on the opposed surface of the other substrate;

a plurality of parallel extraction electrodes on the opposed surfaces on the substrate at the end of a plurality of dynodes remote from the cathode;

two opposed parallel modulation electrodes on opposed surfaces of the substrates adjacent to the extraction electrodes and remote from the cathode, the modulation electrodes having a width approximately equal to the distance between the substrates;

two directly opposed protrusions on opposed surfaces of the substrate adjacent and parallel to the modulation electrodes and remote from the cathode, the protrusions having an electrically conductive surface and forming an electrostatic focusing aperture between adjacent substrates; and

a pair of deflection electrodes on the end of each substrate remote from the cathode, the deflection electrodes being tapered away from the midpoint between the two substrates so that the distance between the deflection electrodes increases going away from the cathode.

4,149,107

BACKWARD WAVE OSCILLATOR TUBE FOR THE PRODUCTION OF MICROWAVE

Pierre Guénard, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 25, 1977, Ser. No. 790,318

Claims priority, application France, Apr. 29, 1976, 76 12826

Int. Cl.[2] H01J *25/34*

U.S. Cl. 315—3.6 **3 Claims**

1. A backward wave oscillator which comprises:

a source of a beam of electrons;

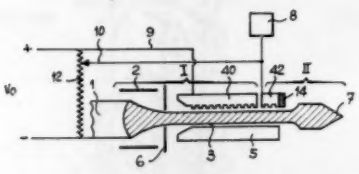
means for focusing said beam of electrons;

a collector spaced from said source for receiving said beam of electrons; and

a delay line exhibiting an attenuation factor per unit length,

disposed intermediate said collector and said electron beam source along which delay line an electromagnetic wave propagates in operation and interacts with the beam characterized in that: said delay line comprises a first and a second delay line section,

said first delay line section modulating the electron beam as it passes thereunder and having a length such that due to its attenuation factor per unit length substantially no energy is available at the end thereof closest to said electron beam source as a result of said interaction, the only result of said interaction being a modulation of the electron beam;



said second delay line section is substantially shorter than said first delay line section is incapable of sustaining oscillations in the absence of the priorly modulated electron beam, the length of said second delay line section being such that due to its attenuation factor per unit length sustain oscillations under interaction with the electron beam priorly modulated by the first delay line section are generated, said backward wave oscillator further comprising:

means, coupled to said second delay line section, for extracting oscillatory energy from the backward wave oscillator.

4,149,108

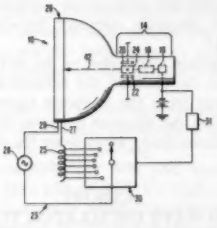
MULTISTABLE CATHODE RAY TYPE STORAGE DISPLAY DEVICE

Ifay F. Chang, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 17, 1977, Ser. No. 807,753

Int. Cl.[2] H01J *31/06, 31/58*

U.S. Cl. 315—8.5 **9 Claims**



1. An improved cathode ray tube storage display device including a high energy electron write gun, a display panel and means for applying an A.C. field across said display panel, the improvement being;

said display panel having the capability of being activated by direct electron beam activation of an electroluminescent film and by electron beam induced light radiation from a layer of the display panel and

means included in said panel to produce a multistable image at selected points thereon by direct electron beam activation from said high energy electron write gun.

4,149,109

LOCATION-SENSITIVE PROPORTIONAL COUNTER TUBE

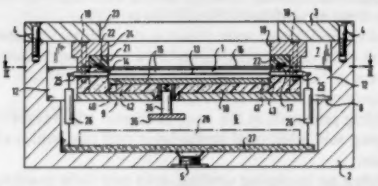
Werner Kreutz, Staufen; Manfred Henne, Blaustein-Herrlingen, and Jurgen Fritz, Umkirch, all of Fed. Rep. of Germany, assignors to M. Braun GmbH, Oberschleissheim, Fed. Rep. of Germany

Filed Oct. 27, 1977, Ser. No. 846,124

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1976, 2649192

Int. Cl.[2] H01J *17/34, 39/29*

U.S. Cl. 315—58 **9 Claims**



1. In a positionally-sensitive proportional counter tube of high resolution having a counting chamber having a longitudinal direction; an insulating member forming a part of said counting chamber; a trough-shaped metallic layer lining said insulating member to form a cathode; a counter tube window extending along a longitudinal side of said counting chamber; a radiation transmissive foil gas-tightly covering said window; and a counter tube wire forming an anode, said wire traversing said counting chamber in the longitudinal direction thereof and being mounted equidistantly spaced from said metallic trough side walls and being fastened at both ends thereof to the electrical elements of preamplifiers, the improvement comprising: said counting chamber having means providing for the opening of the high-pressure chamber to facilitate repair of the tube, and having inlet and outlet apertures for a counter tube gas under high pressure, said counter tube wire ends being directly electrically connected at both ends thereof through the intermediary of fastening means in said insulating member with, respectively, an input resistor of a preamplifier, said counter tube wire being detachably and exchangeably fastened at both ends thereof by said fastening means which comprises at each end of the tube a sleeve cast into said insulating member centrally of the cathode trough cross-section and extending through the end wall of said insulating member; and plug means adapted to engage in each of said sleeves and having one end of said counter tube wire fastened thereto, with the outer end of each sleeve projecting from said insulating member being directly connected to said input resistor of said preamplifier.

4,149,110

BRIGHTNESS CONTROLLED CRT

Andras Dallos, Lincoln, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 29, 1978, Ser. No. 891,238

Int. Cl.[2] H01J *29/98*

U.S. Cl. 315—107 **15 Claims**

1. A cathode ray tube control system comprised of a cathode ray type tube including:

an evacuated envelope,

electron source means disposed within the envelope for producing a thermal emission of electrons therefrom, and

beam forming electrode means aligned within the envelope with the electron source means for directing electrons into a beam; and

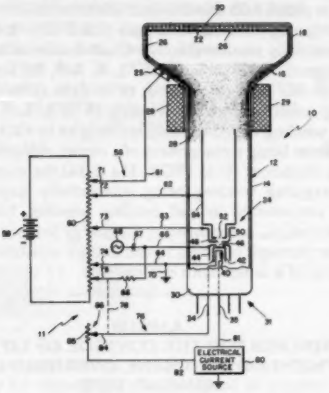
control circuitry disposed externally of the tube and including:

variable voltage supply means connected electrically between the electron source means and the beam form-

ing electrode means for maintaining the electrode means at selected electrical potentials with respect to the potential of the electron source means and controlling the beam current,

adjustable current supply means connected electrically to the electron source means for supplying a heating current thereto and controlling thermal emission of electrons therefrom, and

sensing means coupled to the variable voltage supply means and to the adjustable current supply means for adjusting the emission of electrons from the source means in accordance with the beam current.

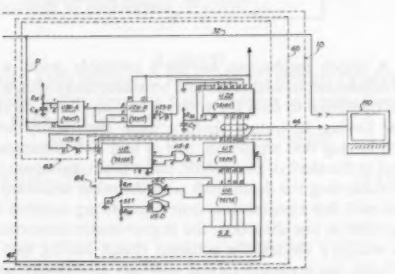


4,149,111

METHOD AND APPARATUS FOR MODULATING THE PERCEPTIBLE INTENSITY OF A LIGHT EMITTING DISPLAY

William J. Coates, Jr., San Diego, Calif., assignor to Science Applications, Inc., La Jolla, Calif.

Filed Nov. 25, 1977, Ser. No. 854,891
Int. Cl.[2] G06F *3/14*; G08B *5/36*
U.S. Cl. 315—169.4 17 Claims



1. An apparatus for interrupting the presentation of a light emitting display, said light emitting display being of the type which emits light by the ionization discharge of a display medium, and which includes a system clock signal, the interruption of which causes an interruption in the presentation of the light emitting display, and which is capable of retaining display information on the interruption of a light sustaining signal as a result of the accumulation and retention of electrical charge across said display medium, such apparatus comprising:

(a) turn-off means for generating a turn-off signal to indicate when the presentation of the light emitting display is to be interrupted;

(b) indication means for generating a retention signal which identifies when the light emitting display is capable of retaining display information;

(c) synchronization means coupled to said turn-off means and to said indication means for generating a gating signal which is in synchronization with the turn-off signal and the repetition signal; and

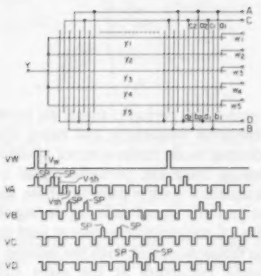
(d) stopping means coupled to said synchronization means for interrupting the system clock signal of the light emitting display in synchronization with the gating signal so that the presentation of the light emitting display is interrupted.

4,149,112

SYSTEM FOR CONTROLLING A SELF-SHIFT TYPE GAS DISCHARGE DISPLAY DEVICE

Hirohide Miwa, and Toshiaki Terakawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Nov. 11, 1977, Ser. No. 850,680
Claims priority, application Japan, Nov. 16, 1976, 51/138058; Nov. 16, 1976, 51/138059
Int. Cl.[2] H05B *37/00, 39/00, 41/00*
U.S. Cl. 340—768 11 Claims



1. In a system for controlling the self-shifting of discharge spots comprising a display in a gas discharge device, said device comprising column electrodes connected to a plurality of bus-lines, row electrodes arranged at right angles to and facing said column electrodes across a discharge gap, at least one insulating layer selectively covering said electrodes, and WRITE electrodes arranged respectively near one end of said row electrodes, said system comprising a driver for applying shift pulses to said plurality of said bus-lines, and a WRITE driver for applying write pulses to said WRITE electrodes, the improvement wherein said system comprises control means for shifting said discharge spots in a selected one of forward and reverse directions along said row electrodes, said control means comprising means for stopping said shift in said reverse direction by detecting the reverse shift corresponding to at least one character of said display.

4,149,113

D. C. POWERED CONTROL CIRCUIT FOR ENERGIZING A COLD CATHODE LAMP

John C. Sammis, El Monte, Calif., assignor to Decor Design Corporation, Los Angeles, Calif.

Filed Dec. 12, 1977, Ser. No. 859,310
Int. Cl.[2] H05B *37/02, 41/30*
U.S. Cl. 315—219 5 Claims

5. A multi-mode d.c. powered control circuit for energizing a cold cathode lamp, the control circuit comprising:

an input to provide for application of d.c. power;

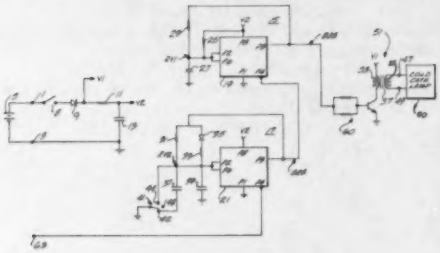
manually operable mode selecting means to provide for selecting between a plurality of different operating modes;

an output for connection to the cold cathode lamp;

circuit means responsive to d.c. power applied to the input for generating a periodic signal defining a different funda-

mental frequency in each of said plurality of operating modes;

the circuit means including first and second astable multivibrator circuits, the first astable multivibrator circuit being controllable in response to a gating control signal supplied by the second astable multivibrator circuit, the second astable multivibrator circuit being responsive to the mode selecting means such that in a first one of the operating modes the gating control signal has a constant waveform and such that in each other operating mode the gating control signal has a pulse waveform with a pulse repetition frequency unique to the respective operating mode, the first astable multivibrator circuit being operative during the first operating mode under control of the constant



waveform to cause the periodic signal to have a preselected pulse repetition frequency, and being operative in each other operating mode under control of the respective pulse waveform to cause the periodic signal to define a fundamental frequency with a pulsing phase and a static phase, with the periodic signal defining during the pulsing phase a plurality of consecutive pulses at said preselected pulse repetition frequency, and with the pulsing and static phases alternately occurring at the same fundamental frequency as the pulse repetition frequency of the waveform defined by the gating control signal; and

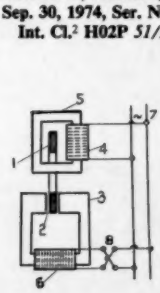
voltage step-up transformer means coupled between said circuit means and said output for providing a control signal to cause the cold cathode lamp to repeatedly reignite at said preselected pulse repetition frequency.

4,149,114

INDUCTION MOTORS HAVING SQUIRREL CAGE ROTORS ANALOGOUS TO COMMUTATOR MOTORS

Richard Gorjan, P.O. Box 83, Rockaway Park, N.Y. 11694

Filed Sep. 30, 1974, Ser. No. 510,418
Int. Cl.[2] H02P *51/28*
U.S. Cl. 318—731 **9 Claims**



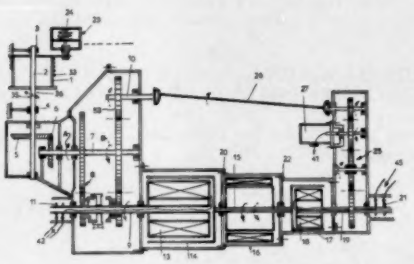
1. Induction motor energized by a source of AC power, comprising a conventional squirrel cage rotor (FIGS. 2 & 4; 13 in FIGS. 6 & 9) with shorted bars (9 in FIGS. 2 & 4), and shorting lateral rings (10 in FIG. 2), being surrounded by the conventional circular air-airgap; a stator system having two independend closed ferromagnetic paths (3, 5 in FIG. 1; 3, 5 in FIGS. 6, 7, 8, 9) each with two opposite ends, facing at two diametrically opposite spots said airgap; the first ferromagnetic path, called energizing path, provided with a first winding for the energization of said motor, and distinctly for the induction of torque producing currents in transformer action within the rotor bars (9 in FIGS. 3 & 4); the second ferromagnetic path, called exciting path, provided with a second winding, distinctly for the generation of a torque producing flux (ϕ_{ex} in FIGS. 6, 7, 8, 9) called exciting flux, the latter being approximately in phase with said induced currents; the cross section of said energizing ferromagnetic path (5 in FIGS. 1, 6, 7, 8, 9) to be substantially smaller then the cross section of said exciting ferromagnetic path (3 in FIGS. 1, 6, 7, 8, 9), representative values of this ratio to be about (1 to 3) to (1 to 4); said first winding called energizing winding (4 in 1, 6, 7, 8, 9); said second winding called exciting winding (6 in FIGS. 1, 6, 7, 8, 9), the latter being a component of a circuit comprising a phase shifting condenser (C in FIGS. 11*a* & 14) the energy fed into said energizing winding being substantially larger then the energy consumated in said exciting winding, both energies being in a ration, as for instance the energy fed into a commutator rotor through brushes, to the energy consumated for the excitation of a motor with commutator.

4,149,115

WINCHES FOR THE CONTROL OF LIFTING EQUIPMENT OF THE CRANE, OVERHEAD CRANE OR SIMILAR TYPE

Jean Noly, La Clakette, France, assignor to Potain, Chevilly Larue, France

Filed Mar. 18, 1977, Ser. No. 779,949
Claims priority, application France, Mar. 18, 1976, 76 08601
Int. Cl.[2] B66D *1/50*
U.S. Cl. 318—301 **10 Claims**



1. A winch mechanism having a rotatable drum, a drum shaft connected to said drum and rotatable therewith, a safety brake operative to stop the rotation of said drum, an electric motor having an output shaft, a main electrically actuated clutch having two armatures, one of said two armatures connected to the shaft of said motor, and a first transmissio system interconnecting the drum shaft with the other armature of the clutch said first transmission system imparting rotation to said drum shaft in one direction, the improvement comprising:

an auxiliary electrically actuated clutch having two armatures, one armature of said auxiliary electrically actuated clutch connected to the shaft of said motor;

a second transmission system interconnecting the other aramature of said auxiliary electrical clutch with said drum shaft, said second transmission system imparting a direction of rotation to the drum shaft the reverse of said one direction imparted to the drum shaft by said first transmission system;

a sensor connected to said drum shaft to generate an electrical signal having a polarity indicative of the rotational direction of the drum and a magnitude inidicative of said drum speed of rotation;

control means receiving a manual input indicative of a commanded direction of rotation and a commanded speed, and the electrical signal generated by said sensor, for generat-

ing electrical signals energizing said main and said auxiliary electrically actuated clutches to rotate said drum in the direction of rotation and the speed commanded by the received manual input.

4,149,116

MOTOR SPEED CONTROL SYSTEM

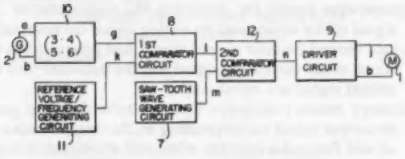
Hiroshi Minakuchi, Shiga, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 20, 1977, Ser. No. 808,289

Claims priority, application Japan, Jun. 23, 1976, 51-74787; Aug. 31, 1976, 51-104794; Sep. 14, 1976, 51-110301

Int. Cl.[2] H02P 5/00

U.S. Cl. 318—341 2 Claims



1. A motor speed control system comprising:

a detector for detecting a rotation speed of a motor;

a first comparator circuit for comparing an output signal of said detector with a reference signal to produce an error signal;

a signal generating circuit for generating a saw-tooth wave having a repetition frequency;

a second comparator circuit for comparing said error signal with said saw-tooth wave to produce a switching signal; and

a driver circuit for driving said motor by said switching signal,

said driver circuit including a first driver circuit for driving said motor by an output signal of said first comparator circuit and a second driver circuit for driving said motor by an output signal of said second comparator circuit, said first and second driver circuits being arranged such that said motor is normally driven by said second driver circuit, but is driven by said first driver circuit when said second driver circuit fails or during a start-up or overload condition of said motor.

4,149,117

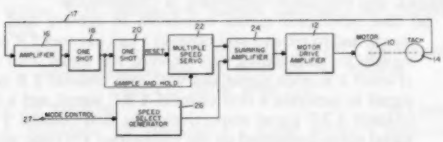
CIRCUIT AND METHOD FOR SERVO SPEED CONTROL

D. William Weber, Fremont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 17, 1977, Ser. No. 778,530

Int. Cl.[2] H62P 5/00

U.S. Cl. 318—315 14 Claims



1. In a servo drive circuit having a speed select generator coupled to a drive motor through an amplifier, and having a tachometer coupled to said drive motor for producing electrical pulses at a frequency proportional to the speed of said motor, an improved servo speed control circuit comprising:

means responsive to the tachometer electrical pulses for generating first and second clock signals;

means for generating a non-linear ramp voltage in response to said first clock signals;

means for sampling said non-linear ramp voltage in response to said second clock signals; and

means for detecting an error between an output of said speed select generator and said sampled non-linear ramp voltage and for applying a voltage to said motor amplifier so as to correct the speed of said motor in accordance with said sampled non-linear ramp voltage.

4,149,118

ELECTRONIC CONTROL AND REGULATION SYSTEM

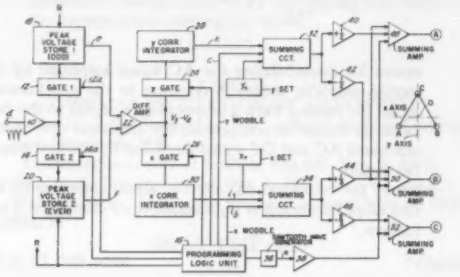
Gerhard Winterling, Magstadt, and Norbert Bissinger, Faurndau, both of Fed. Rep. of Germany, assignors to Max Planck Gesellschaft zur Forderung der Wissenschaften, e.V., Göttingen, Fed. Rep. of Germany

Filed Mar. 18, 1977, Ser. No. 778,988

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1976, 2612012

Int. Cl.[2] G05B 1/06

U.S. Cl. 318—640 10 Claims



1. An electronic control and regulating system for controlling distance, and regulating parallelism of first and second reflectors spaced along an optical axis, said system comprising three electrically controllable support elements positioned in triangular configuration supporting at least one of said reflectors, first means for varying the distance of said first and second reflectors;

and second means for tilting one of said reflectors around first and second tilt axes forming angles significantly unequal to zero with each other and said optical axis, to maintain parallelism of said first and second reflectors, wherein said first and second means are connected to, and control the three support elements of the respective first and second reflectors.

4,149,119

COMBINED AC-DC ELECTROMETER WITH AC FEEDBACK FOR DRIFT COMPENSATION

Robert F. Buchheit, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 20, 1977, Ser. No. 799,051

Int. Cl.[2] G01R 5/28

U.S. Cl. 324—32 5 Claims

1. Electrometer apparatus for developing electric signals representative of charge on a test surface comprising

a housing having a window positionable adjacent charge on a test surface,

a probe fixedly located inside the housing aligned with the window for developing by capacitive coupling a DC signal at the probe representative of charge on a test surface,

shutter means, electrically coupled to the housing, for periodically positioning a shield member between the window and a portion of the probe for developing an AC signal at the probe representative of the potential difference between the probe and the housing,

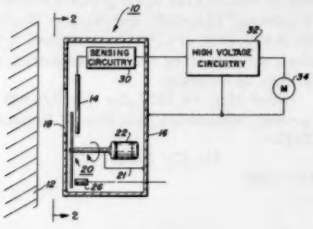
sync means coupled to the shutter means for generating a synchronous signal representative of the periodic posi-

tioning of a shield member between the window and a portion of the probe,

first amplifier means coupled to the probe for amplifying both the AC and DC signals developed at the probe,

second amplifier means capacitively coupled to receive only the AC signal amplified by the first amplifier means for amplifying the AC signal and

demodulator means coupled between the output of the second amplifier means and the input of the first amplfier



means for demodulating the AC signal amplified by the second amplifier means in response to the synchronous signal for feeding back a compensation signal to the first amplifier means to compensate for electrical drift in the combined AC and DC signal amplified by the first amplifier means

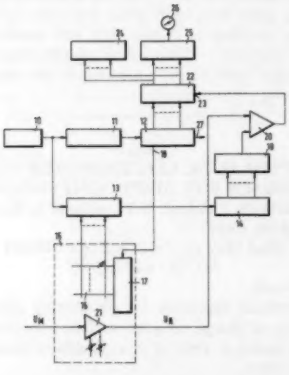
whereby the combined AC and DC signal amplified by the first amplifier means is representative of charge on a test surface.

4,149,120

CIRCUIT ARRANGEMENT FOR LINEARIZING THE OUTPUT SIGNAL OF A TEST SENSOR

Claus Richter, Maulburg, Fed. Rep. of Germany, assignor to Endress & Hauser GmbH & Co., Maulburg, Fed. Rep. of Germany

Filed Apr. 6, 1977, Ser. No. 785,156
Int. Cl.[2] G01R *15/10*
U.S. Cl. 324—132 **8 Claims**



1. A circuit for linearizing the output signal of a measuring sensor, comprising:

clock means for generating electrical clock pulses at a fixed pulse frequency;

first frequency divider means for receiving said clock pulses and generating corresponding first divider output pulses at a fixed frequency defined by a characteristic fixed dividing factor of said first divider;

first pulse counter means for counting the pulses generated by said first frequency divider and generating a first counter output signal corresponding to the instantaneous number of pulses counted;

second frequency divider means for receiving said clock pulses and generating second divider output pulses at a variable frequency defined by a variable dividing factor of said second divider;

second pulse counter means for counting the pulses generated by said second frequency divider and generating a second counter output signal corresponding to the instantaneous number of pulses counted;

control means for periodically setting a particular dividing factor value into said second frequency divider to vary the dividing factor of said second frequency divider so that the count of said second pulse counter varies as a function of time during each period of measurement according to the measuring sensor characteristic to be linearized;

comparator means for receiving the instantaneous output signal of the sensor and an analog signal corresponding to said second counter output signal, and generating a strobe signal when the analog signal and the instantaneous sensor output signal are equal; and

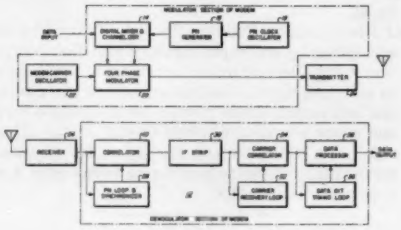
memory means responsive to said strobe signal to generate an output signal corresponding to the instantaneous count of said first pulse counter when said strobe signal is generated.

4,149,121

FOUR PHASE TO TWO PHASE CORRELATOR

Robert S. Gordy, Largo; David E. Sanders, St. Petersburg, and Ramon P. Chambers, Clearwater, all of Fla., assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 23, 1977, Ser. No. 809,235
Int. Cl.[2] H04B *1/16*
U.S. Cl. 325—321 **14 Claims**



1. A four phase to two phase correlator for processing a received RF signal modulated by a transmitted PN code and a digital data signal, said correlator being adaptable for use within a modem having means for generating a channel 1 PN code signal, a channel 1 R code signal, a channel 2 PN code signal, and a channel 2 R code signal, said modem also including means for generating first and second unmodulated RF signals, said correlator comprising in combination:

(a) first modulator means connected to receive said RF signal, and to receive said channel 1 and channel 2 R code signals, for modulating said received RF signal with said channel 1 R code signal and with said channel 2 R code signal to generate a first channel 1 RF signal and a first channel 2 RF signal respectively, the first channel 1 RF signal being modulated by the transmitted PN code signal, the channel 1 R code signal and the digital data signal, and the first channel 2 RF signal being modulated by the transmitted PN code signal, the channel 2 R code signal and the digital data signal;

(b) second modulator means connected to receive said channel 1 and channel 2 R code signals, said first unmodulated RF signal, and to receive said channel 1 and channel 2 PN code signals, said second modulator means modulating said first unmodulated RF signal to generate a second channel 1 RF signal modulated by the channel 1 PN code

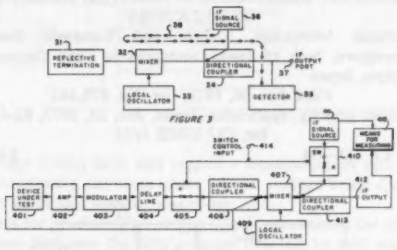
signal and by the channel 1 R code signal and a second channel 2 RF signal modulated by the channel 2 PN code signal and by the channel 2 R code signal; and

(c) third modulator means connected to said first and second modulator means to receive said first and second channel 1 RF signals and said first and second channel 2 RF signals for combining said signals to generate a third RF signal modulated only by the digital data signal.

4,149,122
WIDEBAND TRACKING GENERATOR FOR HARMONIC MIXING RECEIVERS

Vito J. Parato, Bay Shore, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Jun. 30, 1977, Ser. No. 811,709
Int. Cl.² H04B *17/00*
U.S. Cl. 325—363 **3 Claims**



1. Apparatus for measuring the gain of a device under test, which includes a superheterodyne receiver comprising:

(a) means for applying a first IF signal to the mixer of the receiver,

(b) means for extracting from the receiver an RF signal produced from said IF signal by the mixer,

(c) means for applying said RF signal to a device under test,

(d) means for applying said RF signal after passing through the device under test to the RF port of the receiver for conversion in said mixer to a second IF signal,

(e) means for separating said second IF signal from said first RF signal, and

(f) means for measuring the relative signal strength of said first and second IF signals after separation to determine the gain of said device under test.

4,149,123
ATTENUATOR

Martin R. Richmond, Lexington, Mass., and Alfred J. Cann, Wilton, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

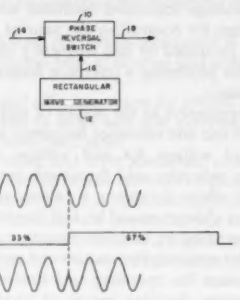
Continuation of Ser. No. 797,650, May 16, 1977, abandoned. This application Jun. 30, 1978, Ser. No. 920,928
Int. Cl.² H03K *9/02, 5/08*
U.S. Cl. 328—168 **10 Claims**

1. Apparatus for attenuating a signal within a particular bandwidth, comprising:

a phase reversal switch having first and second inputs and an output;

means for applying an input signal to said first input of said phase reversal switch; and

means for applying an asymmetrical rectangular wave having a low frequency relative to said signal but greater than said bandwidth to the second input of said phase reversal switch such that said asymmetrical rectangular wave occasions phase reversal of the input signal causing a power reduction in the center line of the output spectrum at the frequency of the input signal and whereby variable

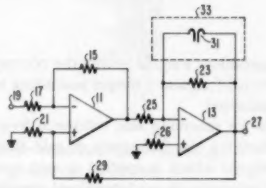


attenuation can be achieved by varying the duty factor of the asymmetrical rectangular wave.

4,149,124
THERMAL PROTECTION OF AMPLIFIERS

Miroslav Glogolja, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 638,845, Dec. 8, 1975, abandoned. This application Dec. 1, 1977, Ser. No. 856,211
Claims priority, application United Kingdom, May 2, 1975, 18592/75
Int. Cl.² H03F *21/00*
U.S. Cl. 330—298 **7 Claims**



1. A method for protecting the transistors in the output stage of an amplifier from thermal overload, said amplifier having a gain in proportion to a feedback resistance element therein, said method comprising the steps of:

sensing the temperature of said output stage; and

connecting a relatively low resistance across at least a portion of said feedback resistance element whenever the temperature of said output stage reaches a predetermined threshold level to thereby reduce the gain of said amplifier.

4,149,125
FREQUENCY SYNTHESIZER FOR TRANSMITTER RECEIVER USING A PHASE LOCKED LOOP

Shigehiko Ikeguchi, Gunma; Noboru Usui, Oota, and Norio Yamashita, Gunma, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi and Tokyo Sanyo Electric Co., Ltd, Gunma, both of, Japan

Filed Dec. 2, 1976, Ser. No. 746,707
Claims priority, application Japan, Dec. 16, 1975, 50-150407
Int. Cl.² H03B *3/04*
U.S. Cl. 331—1 A **9 Claims**

3. A frequency synthesizer for providing a signal of a frequency lying within at least one of respective first and second frequency ranges, said frequency synthesizer comprising:

voltage controlled oscillator means for producing a signal

whose frequency is variable as a function of a control voltage,

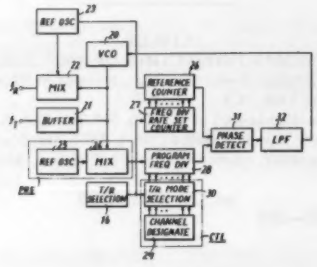
means for changing the frequency of the signal produced by said voltage controlled oscillator means,

first means for controlling the amount of frequency change to be produced by said frequency changing means,

means for producing a reference frequency signal at a fixed frequency,

means responsive to the output of said frequency changing means and said reference frequency signal for producing a control voltage for said voltage controlled oscillator means whereby said frequency synthesizer produces a signal whose frequency is related to the amount of frequency change caused by said frequency changing means as controlled by said first means,

means for selecting first and second operating modes including means for operating said first means to control said frequency changing means to produce a different frequency change ratio as between said first and second operating modes such that said voltage controlled oscilla-



tor means produces a signal within the corresponding said first and second frequency ranges according to the operating mode selected,

second means for receiving said reference frequency signal and for changing the frequency of said fixed frequency reference signal which is applied to said control voltage producing means by a predetermined amount, including means for dividing the frequency of said reference frequency signal prior to application to said control voltage signal producing means, means for multiplying the frequency of said divided reference frequency signal, means for mixing the multiplied frequency of the reference frequency signal and the output from said voltage controlled oscillator means and applying the signal produced by the mixing to said frequency changing means, and

first and second output means for producing respective first and second output signals in said first and second frequency bands in response to the selection of a respective one of said first and second operating modes by said mode selecting means.

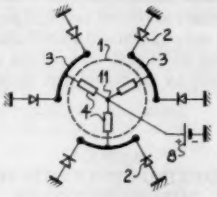
4,149,126

DIODE AND DIELECTRIC RESONATOR MICROWAVE OSCILLATOR

Yves Archambault, and Didier Kaminsky, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 27, 1977, Ser. No. 864,550
Claims priority, application France, Dec. 31, 1976, 76 39717
Int. Cl.[2] H03B 7/14
U.S. Cl. 331—56 **11 Claims**

1. A diode microwave oscillator comprising said diodes in even number (2N), said diodes being semiconducting diodes with a negative resistance at high frequencies; a dielectric resonator, and a plurality of (N) lines with diodes in in groups of two, each of said lines providing coupling between the two



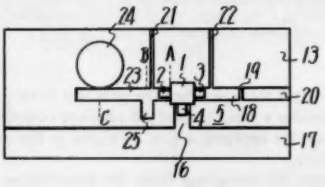
diodes of the corresponding group and said resonator, the diodes in each group operating in phase opposition.

4,149,127

DIELECTRIC RESONATOR STABILIZED MICRO-STRIP OSCILLATORS

Yoshikazu Murakami, Tokyo, and Yasutoshi Komatsu, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 20, 1978, Ser. No. 871,141
Claims priority, application Japan, Jan. 21, 1977, 52-6159
Int. Cl.[2] H03B 5/18
U.S. Cl. 331—96 **2 Claims**



1. An integrated microwave oscillator comprising:

(a) an active element for oscillation having first, second and third terminals;

(b) micro-strip lines connected to said first, second and third terminals, respectively, and forming a feedback circuit; and

(c) a dielectric resonator coupled at a predetermined position to one of said micro-strip lines which is not used as an output terminal.

4,149,128

CHARGE TRANSFER DEVICE TRANSVERSAL FILTER HAVING ELECTRONICALLY CONTROLLABLE WEIGHTING FACTORS

James M. White, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,748
Int. Cl.[2] H03H 7/28; H01L 27/10, 29/78; G11C 19/28
U.S. Cl. 333—165 **1 Claim**

1. A charge transfer device transversal filter having controllable weighting factors, comprising:

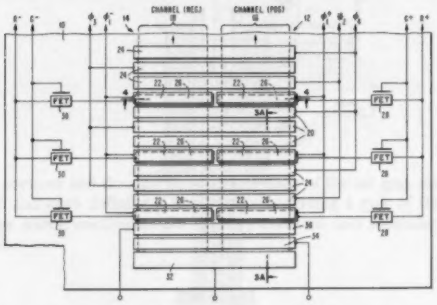
first and second equivalent charge transfer device analog shift registers, each forming a corresponding plurality of successive charge transfer stages thereby defining a plurality of pairs of corresponding charge transfer stages, each charge transfer stage having a plurality of transfer electrodes insulatingly overlying a suitable substrate, one of said transfer electrodes of each stage being a sensing electrode, said sensing electrode having a floating electrode insulatingly sandwiched between said sensing electrode and said substrate;

means for controllably charging said floating electrodes of

each pair of charge transfer stages relative to each other so as to define a selected weighting factor, the weighting factors of all pairs of charge transfer stages in combination defining a selected impulse response for the filter;

means for applying input signals to said first and second shift registers for storage as electrical charge signals in successive ones of said stages, the same electrical charge signals being simultaneously stored in both stages of each of said pairs;

means for applying phase related voltages to said charge transfer stages to effect transfer of charge from stage to



stage within both said registers simultaneously and synchronously, the same phase related voltage being applied to all of said sensing electrodes; and

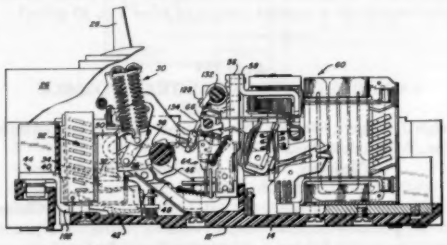
means for producing an output signal representing the difference between the total charge flowing to said sensing electrodes of said first register and the total charge flowing to said sensing electrodes of said second register as a result of said stored electrical charge signals being transferred either into or out of the depletion regions associated with said sensing electrodes, said output signal being a weighted summation of said stored electrical charge signals.

4,149,129

CONTACT CONTROL ASSEMBLY FOR A CIRCUIT BREAKER

Paul R. Andersen, and Rodney C. Kramer, both of Cedar Rapids, Iowa, assignors to Square D Company, Park Ridge, Ill.

Filed Jun. 8, 1977, Ser. No. 804,694
Int. Cl.[2] H01H *73/02*
U.S. Cl. 335—21 **22 Claims**



4. A contact control assembly for a circuit breaker having a pair of serially connected main circuit breaker contacts operable to a closed position by an operating assembly having an associated trip bar arranged to control said operating assembly to open said contacts in response to movement of said trip bar, the improvement comprising:

an adjustment arm pivotally supported for rotation about one axis,

a yoke,

a lever pivotally carried on said arm for rotation about a second axis rotatable with said arm about said first axis,

an armature carried by said lever for movement relative said yoke,

means biasing said lever for pivotal movement in one direction about said second axis for moving said armature from said yoke,

means biasing for said adjustment arm for pivotal movement about said first axis to move said arm carrying said lever and armature toward said yoke;

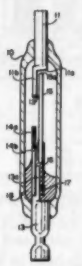
stop means for pivoting said lever about said second axis in response to the rotation of said second axis about said first axis to move said second axis and armature relative said yoke to thereby maintain one portion of said lever a substantially constant distance from said trip bar irrespective of the spacing between said armature and yoke.

4,149,130

MINIATURE MERCURY CONTACT REED SWITCH CONSTRUCTION

Laimons Lacis, Bloomfield, and Steven Horvath, Irvington, both of N.J., assignors to Gordos Corporation, Bloomfield, N.J.

Filed Jan. 20, 1978, Ser. No. 870,947
Int. Cl.[2] H01H *51/06*
U.S. Cl. 335—154 **14 Claims**



1. A miniature reed switch comprising:

an insulating support structure,

a first conductive magnetic member providing a fixed pole supported by the insulating support structure and supporting one switch terminal and having a stepped construction provided by a magnetic conductive extension laterally offset from axial alignment with the rest of the member and extending parallel to the axial direction,

a second conductive magnetic member providing an armature support element supported on the insulating support structure and generally aligned with but separated from the first magnetic member, providing the other switch terminal and having a stepped construction provided by a magnetic conductive extension laterally offset from axial alignment to the same side as the extension of the first conductive magnetic member,

a magnetic armature member extending between said first and second magnetic members and of such length and position that it overlaps axial extending portions of each conductive magnetic member and fits within the step of each without touching,

a spring support member connected between the armature support element and the armature and supporting the armature in a position spaced away from the first conductive magnetic member in the absence of a magnetic field in its unstressed condition and providing a flexible connection which permits the armature to move into improved alignment with said first and second magnetic members to a reluctance minimizing position in the presence of a magnetic field, and

a conductive contact on the extension of the fixed first conductive magnetic member projecting toward the axis and

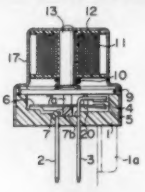
providing an electrical circuit completing contact for the fixed pole and mechanical spacing means limiting the approach of the armature to the magnetic extension.

4,149,131

ELECTROMAGNETIC RELAY

Siyoutaro Kawamura, Oobu; Mitsuru Ueda, Chita, and Makoto Imaeda, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 23, 1976, Ser. No. 753,859
Claims priority, application Japan, Jan. 17, 1976, 51-4101[U]
Int. Cl.[2] H01H *9/02*
U.S. Cl. 335—202 **13 Claims**



1. An electromagnetic relay comprising:

a cylindrical casing having an opening at one end thereof;

a core provided in the form of a bar and having one end thereof secured to the other end of said cylindrical casing;

a spool having a through-hole in an axial direction thereof, into which said core in the form of a bar is inserted for attachment;

an electromagnetic coil wound about said spool and having both ends thereof led out from a bottom surface of said spool and electrically connected to contact terminals, said bottom surface of said spool having cutout portions through each of which a said end of said coil passes for connection to said respective contact terminal, with said terminal being disposed on said bottom surface opposite to said coil;

an armature plate positioned in parallel with a bottom surface of said core and attracted towards the bottom surface of said core due to an electromagnetic force produced when said electromagnetic coil is energized;

drive members for switching, from an open condition to a closed condition, a movable contact and a fixed contact due to an attracting force applied to said armature plate; and

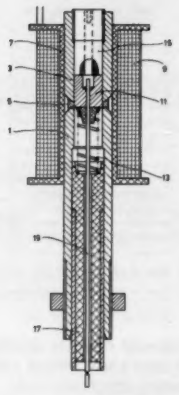
a base for securing thereon outer terminals having said fixed contact and current-feeding terminals attached to said cylindrical casing at said opening thereof and movably supporting said armature plate in a space defined between a top surface of said base and the bottom surface of said core, said base being mounted to provide electrical connection of said contact terminals with said current feeding terminals to feed a current to said electromagnetic coil by contacting said contact terminals with said current feeding terminals, said current feeding terminals having ends in said casing, said ends each having aligned V-shaped notches for receiving and retaining one end of a resistance means.

4,149,132

METHOD OF MANUFACTURING AN ELECTROMAGNET

Hermann Richter, and Wendelin Weber, both of Siegen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 5, 1977, Ser. No. 839,653
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1976, 2650873
Int. Cl.[2] H01F *7/16*; C25D *5/50, 5/34*
U.S. Cl. 335—262 **6 Claims**



1. A method of manufacturing an electromagnet, comprising two coaxial tubular poleshoes and an armature movable within said poleshoes against spring force when a coil arranged around the poleshoes is excited, comprising the steps of degreasing and pickling the inner surfaces of the tubular poleshoes and the outer surface of the armature, electro-depositing metal nuclei on said surfaces at a current density of about 5 to 30 a/dm^2, depositing on the nucleated surfaces a layer of nickel-phosphorus having a thickness of about 5 to 15 μm and heating the nickel-phosphorus layer to about 400° C. to render it magnetically permeable.

4. An electromagnet comprising two coaxial poleshoes an armature movable within said poleshoes, resilient means restraining movement of said armature, coil means to energize said poleshoes and produce a magnetic field in said poleshoes which moves said armature against said resilient means, the inner surfaces of said poleshoes and outer surface of said armature each having a layer about 5 to 15 μm in thickness of magnetically permeable nickel-phosphide on metal nuclei electro-deposited at current density of from 5 to 30 a/dm^2.

4,149,133

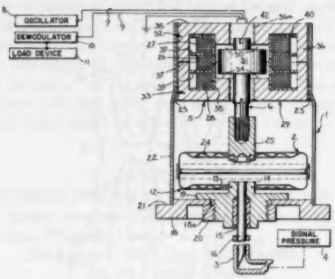
VARIABLE DIFFERENTIAL TRANSFORMER APPARATUS

Adolph J. Hilgert, Mequon, Wis., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Oct. 14, 1977, Ser. No. 842,288
Int. Cl.[2] H01F *21/06*
U.S. Cl. 336—30 **21 Claims**

1. A position-sensitive linear variable differential transformer apparatus having a primary coil and first and second secondary coils located in stacked relation to the opposite sides of said primary coil and connected in series opposition, comprising a winding core of a low reluctance material and having an inner chamber having a cross-section substantially complementing said stacked coils and having an inner wall, said stacked coils being located in said chamber adjacent the inner wall, said inner wall including a pair of opposed inner core leg portions spaced from each other and axially aligned to define an air gap aligned with the primary winding, said primary

winding spanning said air gap, a movable core located in alignment with the opposed inner core leg portions and within said air gap and having a movable support means for selective axial positioning of said core axially within said air gap between the



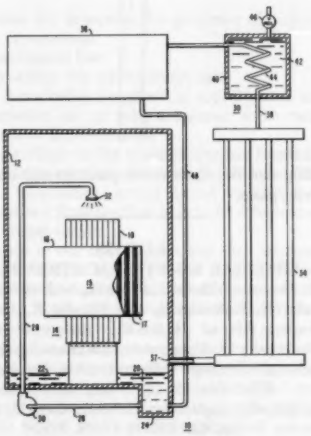
leg portions and thereby the opposite ends of the air gap, said coils and core defining a flux pattern including a pair of flux loops which encompass the primary coil and said secondary coils.

4,149,134

VAPORIZATION-COOLED ELECTRICAL APPARATUS

Richard E. Kothmann, Churchill Borough, and Donald K. Whirlow, Murrysville, both of Pa., assignors to Elect Power Research Institute, Inc., Palo Alto, Calif.

Filed Aug. 1, 1977, Ser. No. 820,679
Int. Cl.[2] H01F *27/10*
U.S. Cl. 336—57 **14 Claims**



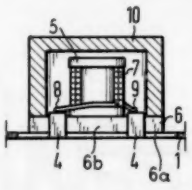
1. An electrical apparatus comprising:
a sealed housing;
a heat producing member disposed within said housing;
a quantity of dielectric fluid, vaporizable within the normal operating temperature range of said electrical apparatus, disposed within said housing;
means for applying said dielectric fluid onto said heat producing member such that a portion of said fluid vaporizes as it contacts said heat producing member dissipating heat from said heat producing member:
first means disposed in fluid communication with said sealed housing for cooling said vapors of said dielectric fluid, said first cooling means being operative to provide sufficient cooling of said heat producing member under normal operating conditions;
storage means;
means for connecting said storage means and said first cooling means in fluid flow communication;
a gas, substantially non-condensable over the normal operating temperature and pressure range of said electrical apparatus, flowable between said sealed housing, said first cooling means, said connecting means and said storage means in response to the flow of said vapors of said dielectric fluid;
second means for cooling said vapors of said dielectric fluid, said second cooling means being separate from said first cooling means and disposed in heat transfer relation with said connecting means, said second cooling means being operable only when said heat producing member is operated above said normal operating conditions; and
means for maintaining said second cooling means at ambient temperature while said heat producing member is operated at said normal operating conditions.

4,149,135

ELECTRICAL COIL AND METHOD OF PRODUCING THE SAME

Gustav Roespel, Unterhaching, and Horst Scheffler, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 14, 1977, Ser. No. 787,599
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1976, 2617465
Int. Cl.[2] H01F *15/02, 41/02*
U.S. Cl. 336—65 **6 Claims**



1. In an electrical coil having a protective cap, a round ferrite core, an electrical winding and connective elements useful for installation in an enclosed layered circuit, the improvement wherein:
the round core is positioned, in one piece, on a ferrite base plate and the protective cap is secured onto the base plate and about the core,
the winding wire ends are positioned in contact with portions of connective elements located within the interior of the protective cap, with another portion of the connective elements being located outside the interior of the protective cap and resting on a surface of the base plate which is facing away from the core, and
the connective elements are strip-shaped and enclose the ferrite base plate in a claw-like manner.

4,149,136

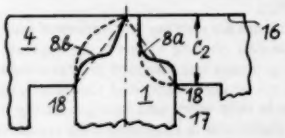
CORE LAMINATION FOR SHELL-TYPE CORES, PREFERABLY FOR TRANSFORMERS

Karl Philberth, and Bernhard Philberth, both of Peter-Rosegger-Strasse 6, Puchheim, Fed. Rep. of Germany

Filed Oct. 5, 1977, Ser. No. 838,977
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658665
Int. Cl.[2] H01F *27/24*
U.S. Cl. 336—217 **25 Claims**

1. Core laminations for shell-type cores, comprising said laminations alternately interleaved, each of said core laminations being of one-piece construction and having a center leg,

two outer legs parallel thereto at a certain distance, and two yokes connecting the ends of said legs, at least one joint being provided between one side of the center leg and the adjacent yoke being called a parted yoke for interleaving with a winding and the other yoke having no joints with the center leg and the two outer legs, wherein the sum of the width (c_1) of the jointlessly connecting yoke and the width (c_2) of the parted



yoke is at least 1.25 times and maximum 1.45 times the center leg width (f), wherein the length of the joint at each side of the center axis is at least 0.75 times the center leg width (f) and wherein the joint has at least one concave part and at least one convex part on at least one side of the center axis, relative to said center axis, said alternate interleaving being realized by the joints of the parted yokes being overlapped by the jointlessly connecting yokes of the adjacent laminations.

4,149,137

FLAT SAFETY FUSE

Alfred Konnemann, Wuppertal, Fed. Rep. of Germany, assignor to Grote & Hartmann GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

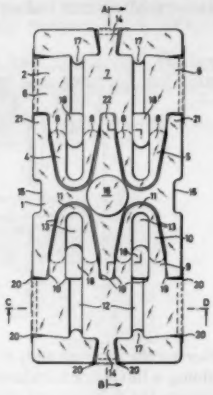
Filed Jun. 16, 1977, Ser. No. 807,158

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1976, 2630697

Int. Cl.[2] H01H *85/10*

U.S. Cl. 337—295 **15 Claims**

1. A flat safety fuse particularly for flow of electricity in a motor vehicle, said fuse comprising a carrier plate having an outer surface of synthetic material, at least one flat sheet metal plate formed of a single unitary piece of substantially constant thickness disposed on said outer surface of said carrier plate, said flat sheet metal plate including at least one fusible arc section, said fusible arc section further including two spaced apart bases at opposite ends thereof, and at least two surface contact terminal sections formed from said flat sheet metal plate, each of said contact terminal sections being continuous from an associated one of said bases, and securing means coupled between said carrier plate and said flat sheet metal plate



for holding said flat sheet metal plate on said outer surface of said carrier plate.

4,149,138

THERMAL BIMETALLIC STRIP RELAY

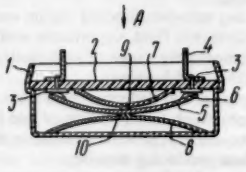
Mark G. Pevzner; Nikolai I. Pinchuk, both of Smolensk; Pavel I. Krukover, Kaliningrad, and Nikolai K. Lemchuzhnikov, Smolensk, all of U.S.S.R., assignors to Nauchno-Issledovatelsky I Konstruktorsko-Teknologichesky Institut Teploenergeticheskogo Priborostroenia, Smolensk, U.S.S.R.

Filed Jun. 28, 1977, Ser. No. 810,764

Claims priority, application U.S.S.R., Oct. 15, 1976, 2410852

Int. Cl.[2] H01H *37/04, 37/54*

U.S. Cl. 337—372 **3 Claims**



1. A thermal bimetallic strip relay, comprising: a capsule formed of a metal case and a cover made of thermal and electric insulating material; electric contact means disposed inside said capsule having fixed contacts attached to said cover and a

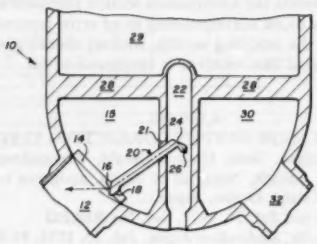
spherical clapping plate of an elastic thermal bimetal, said plate having contacts secured opposite to said fixed contacts; said spherical clapping plate when cooled closes said fixed contacts by co-actions with said plate contacts; said spherical clapping plate being disposed with its center on a lower support defined as a bent elastic thermal bimetallic plate, the edges of said lower support leaning against the bottom of said capsule case; an upper support is provided as a bent elastic thermal bimetallic plate between said capsule cover and said spherical clapping plate, the edges of said upper plate being at rest on said cover and having a top thereof disposed against the center of said spherical clapping plate; and lead means secured externally to said fixed contacts attached to said cover.

4,149,139

ULTRASONIC TRANSMISSION DEVICE

Richard E. Kronk, Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 1, 1977, Ser. No. 812,089
Int. Cl.[2] G01S *9/66*
U.S. Cl. 340—3 R **4 Claims**



1. An apparatus for detecting the presence of objects in a liquid medium, comprising:

a. a solid transmission bar;

b. a first path within the transmission bar;

c. means for introducing longitudinal sound waves into the first transmission bar in such a manner as to cause the waves to follow the first path;

d. a reflecting surface on the transmission bar located in the first path and oriented at such an angle with the first path as to cause longitudinal sound waves impinging on the reflecting surface from the first path to be reflected at least partially as shear waves;

e. a second path in the transmission bar that intersects the first path at the reflecting surface and forms such an angle with the reflecting surface that shear waves reflected off the reflecting surface by longitudinal waves traveling along the first path travel along the second path;

f. a first refraction surface on the transmission bar that forms such an angle with the second path that, when the first refraction surface is in contact with the liquid medium, shear waves traveling along the second path are transmitted into the liquid medium as longitudinal waves, the longitudinal waves thereby being propagated along a third path in the liquid medium and, when objects are encountered in the third path, causing echos that are at least partially transmitted back along the third path as longitudinal waves, transmitted back along the third path as longitudinal waves, transmitted back along the second path to the reflecting surface as shear waves, and reflected off the reflecting surface to travel back along the first path as longitudinal waves;

g. means for sensing waves traveling back along the first path, thereby detecting echos from the objects in the third path;

h. an alternate refraction surface on the transmission bar;

i. an alternate second path between the alternate refraction surface and the reflection surface, the alternate second path being oriented at such an angle with the reflection surface that shear waves following the alternate second path from the alternate refraction surface to the reflection surface are reflected at least partly as longitudinal waves, the alternate second path being oriented at such an angle with the alternate refraction surface that, when the alternate refraction surface is in contact with the liquid medium, shear waves traveling from the reflecting surface to the alternate refracting surface along the alternate second path are transmitted into the liquid medium along an alternate third path as longitudinal waves;

j. an alternate first path in the transmission bar that meets the alternate second path at the reflection surface at such an angle that longitudinal waves reflected off the reflection surface by shear waves that travel along the alternate second path from the alternate refraction surface and impinge upon the reflection surface travel along the alternate first path;

k. means for introducing longitudinal sound waves into the transmission bar in such a manner as to cause them to follow the alternate first path; and

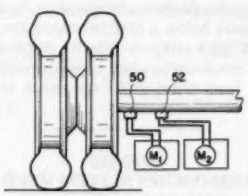
l. means for sensing waves reaching a point in the alternate first path, thereby detecting echos reflected from objects in the alternate third path.

4,149,140

METHOD AND MEANS FOR DETECTING CHANGE IN TIRE PRESSURE

Ronald H. Evans, Rte. 1, Inola, Okla. 74036, and Jon M. Miller, Hangar 1, Tulsa Intl. Airport, Tulsa, Okla.

Filed May 23, 1977, Ser. No. 799,154
Int. Cl.[2] B60C *23/00*
U.S. Cl. 340—58 **1 Claim**



1. Apparatus for detecting a change of pressure in one tire of a dual wheel assembly mounted to an axle housing by detecting a shift in the point of application of the resultant ground force transmitted by said dual wheel assembly to the axle housing, which comprises:

at least two strain gauges affixed to the axle housing adjacent said dual wheel assembly, but placed at separate distances therefrom;

means for detecting a change in resistance of each strain gauge; and

means for comparing the change in resistance of each strain gauge in such a manner so as to determine a change in the point of application of the resultant ground force on the axle housing.

4,149,141

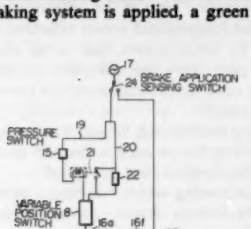
VEHICLE LIGHT ASSEMBLY

Kiyotaka Tanimura, 5-2 Hama-cho 1-chome, Odawara, Kanagawa, Japan

Continuation-in-part of Ser. No. 717,558, Aug. 26, 1976, Pat. No. 4,059,824. This application Aug. 17, 1977, Ser. No. 825,456
Int. Cl.[2] B60Q *1/26*
U.S. Cl. 340—66 **2 Claims**

1. A vehicle light assembly for indicating operating conditions of the vehicle to drivers of trailing vehicles, said assembly comprising:

a lamp housing rotatably mounted on the vehicle so as to selectively take either one of two angular positions, at least three green lamps and an amber lamp mounted on the lamp housing on another side thereof, means for urging normally the lamp housing to a first angular position wherein said one side of the lamp housing is directed rearwardly of the vehicle, means for rotating the lamp housing to a second angular position wherein said red lamp only may be visible by drivers of trailing vehicles, an electric source, a red lamp circuit operatively associated with a braking system of the vehicle for connecting the red lamp and said rotating means with the electric source when the braking system is applied, a green and amber



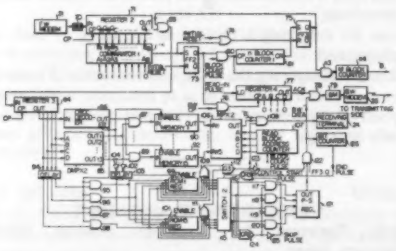
lamp circuit connected to the electric source only when the red lamp circuit is deenergized and including a variable position switch operatively associated with the accelerator pedal of the vehicle to light a selected number of green lamps as a function of the position of the accelerator pedal, a pressure switch operatively associated with a sensor detecting intake pressure of the engine of the vehicle to extinguish the green lamps upon the decrease of the intake pressure below a predetermined level indicative of engine braking, a relay electrically coupled to said green lamps and operative to close a relay switch connected to the amber lamp when all of the green lamps are extinguished.

4,149,142

SIGNAL TRANSMISSION SYSTEM WITH AN ERROR CONTROL TECHNIQUE

Satoshi Kageyama; Keiji Takeuchi, both of Yokohama, and Keisuke Ogi, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Aug. 19, 1977, Ser. No. 826,053
Claims priority, application Japan, Aug. 20, 1976, 51-99364
Int. Cl.[2] G08C *25/02*
U.S. Cl. 340—146.1 BA **9 Claims**



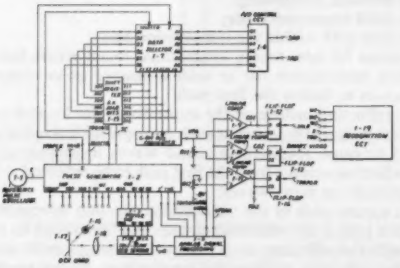
1. A signal transmission system using a selective automatic repeat request system which comprises a transmission section including first memory means for storing data being transmitted in the form having the prescribed block length measured by a number of bits, control means for selecting a data block having the prescribed serial number from among those which are stored in the memory means, and means connected to the output of the control means for attaching the prescribed check code to the selected data block and for transmitting the code attached data block to a communication channel; and a receiving section including receiving means for receiving a data block sent forth from the transmission section through the communication channel, detection means for detecting an error in a data block received by the receiving means, second memory means connected to the output of the detection means for successively storing only error-free correct data blocks included in the received data blocks, and means which generates an error control signal including a negative acknowledgement information when an erroneous data block is detected by the detection means and which generates no control signal when no erroneous data block is detected by the detection means, said error control signal indicating a demand for retransmission of a new error-free data block corresponding to the previously transmitted data block whose error has been detected by the detection means and said error control signal being transmitted through the communication channel to the control means in the transmission section so that the control means selects the data block corresponding to the error control signal, and wherein the transmission section retransmits a new error-free data block corresponding to an error control signal received from the receiving section, without checking whether the control signal thus received is erroneous or not.

4,149,143

IMAGE SENSOR OUTPUT CORRECTING SYSTEM

Humikazu Nagano, Nara; Hiromu Sasaki, Yamatokooriyama, and Syoichi Yasuda, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 22, 1977, Ser. No. 818,203
Claims priority, application Japan, Jul. 30, 1976, 51-92568
Int. Cl.[2] G06K *9/00*
U.S. Cl. 340—146.3 AG **4 Claims**



1. In an image sensor output correcting system comprising:

an object being read including a background having an optical characteristic level in one direction and image information indicia having an optical characteristic level in the other direction, said object being read including a first region where no image information indicia are recorded and a second region where image information indicia are recorded,

means for optically scanning along a scanning line successively said object being read for converting the optical characteristics of the portion being scanned into an electrical analog signal, said scanning line covering a plurality of image elements,

quantizing means, responsive to an analog slicing level, for converting said electrical analog signal, corresponding to the second region of said read object, into a first bivalued digital signal,

comparison means, operatively coupled to said scanning means and quantizing means, for comparing said analog signal of an element of the scanning line being currently scanned obtainable from said scanning means with another

analog signal bearing a fixed relationship to a second bivalued digital signal corresponding to the corresponding element in the preceding scanning line,

storage means for storing one of said first and second bivalued digital signals,

the improvement comprising:

a signal processing means for intermittently sampling the portion of the output of said optical scanner means corresponding to the first region of said read object to generate said analog slicing level in response to said intermittent samples.

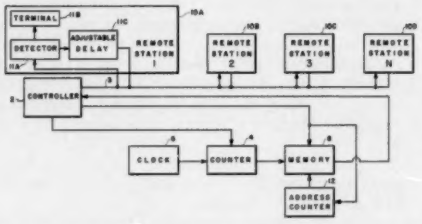
4,149,144
POLLING AND DATA COMMUNICATION SYSTEM HAVING A PULSE POSITION TO BINARY ADDRESS CONVERSION CIRCUIT

Charles G. Diefenderfer, Elkins Park, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 723,156, Sep. 14, 1976, abandoned. This application Jul. 5, 1977, Ser. No. 812,692

Int. Cl.[2] H04Q *5/00*; H04J *3/00*

U.S. Cl. 340—147 R **21 Claims**



9. A data communication system for converting a relative position of a remote station on a data highway to a binary address for addressing the remote station comprising

a bidirectional data highway,

controller means connected to said data highway for issuing a poll command onto said data highway,

a plurality of remote stations connected to said data highway, said remote stations each including means responsive to said poll command on said data highway for selectively issuing a reply signal at a predetermined time following a reception of said poll command corresponding to the relative position on said data highway for each of said remote stations, and

address generating means connected to said controller means for converting each time duration between said poll command and each of said reply signals from said remote stations to corresponding addresses for each of said remote stations issuing said reply signal.

4,149,145
FAX PROCESSOR

David Hartke, Pasadena, and Warren M. Sterling, Hermosa Beach, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 17, 1977, Ser. No. 769,595

Int. Cl.[2] G06F *3/14*

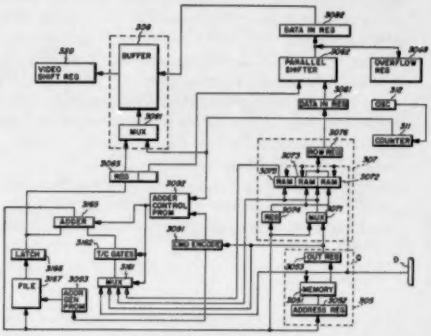
U.S. Cl. 340—739 **4 Claims**

1. A graphics processing system for decompression of compressed graphics data in synchronism with the syncs of a video tube, comprising:

memory means adapted to store an indicating vector string of binary segments and a plurality of binary code arrays indicative of row segments of graphic data;

first means connected to said memory means for extracting a first selected row segment from said code array when the corresponding binary bit in said vector string is of a predetermined polarity;

second means connected to said first means for producing a next adjacent row segment all of one polarity if the binary value of the corresponding vector signal is of a polarity different from said predetermined polarity or for extracting another corresponding selected row segmented from said code array if the binary value of said corresponding vector signal is of said predetermined polarity; and



third means coupled to said second means for inverting the polarity of said row segment so produced or extracted if a designated bit of said first selected row segment is of a selected polarity.

4,149,146
DRIVER CIRCUIT FOR ELECTROCHROMIC DISPLAY DEVICE

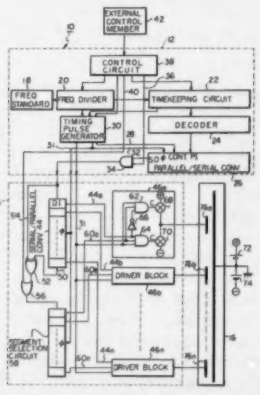
Heihachiro Ebihara, and Fukuo Sekiya, both of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Feb. 7, 1977, Ser. No. 766,151

Claims priority, application Japan, Feb. 9, 1976, 51-13092

Int. Cl.[2] G06F *3/14*

U.S. Cl. 58—23 R **3 Claims**



1. In an electronic device having an electrochromic display device having a common electrode connected to a power supply and a plurality of segment electrodes associated therewith to provide a display of information, the combination comprising:

a logic circuit including means for generating display information signals in a parallel form, a timing pulse generator for generating clock pulses, and a parallel/serial converter connected to said display information signal generating means for generating serial output data in response to said display information signals and said clock pulses; and

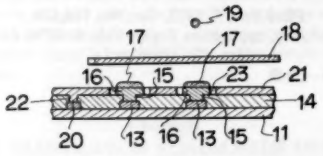
a driver circuit including a serial/parallel converter having its input connected to an output of said parallel/serial converter and producing parallel output data in response to said serial output data and said clock pulses, said serial/parallel converter also producing a serial data as a previous display data in response to said serial output data and said clock pulses, a detection circuit receiving said serial output data as a new display data and said serial data as a previous display data and comparing these data for producing a non-coincidence signal when said new display data and said previous display data are out of coincidence, a segment selection circuit responsive to said non-coincidence signal for generating a segment selection signal to select only a segment whose display state is to be changed, and a plurality of driver means one of which is selected in response to said selection signal to produce bleaching and coloring signals in response to said parallel output data for thereby driving only said segment whose display state is to be changed.

4,149,147

LUMINESCENT CHARACTER DISPLAY DEVICE

Takao Kishino, Mobara, Japan, assignor to Futaba Denshi Kogyo K.K., Chiba, Japan

Filed Apr. 15, 1977, Ser. No. 787,924
Claims priority, application Japan, Apr. 15, 1976, 51-41834; Apr. 30, 1976, 51-53336[U]
Int. Cl.[2] G06F *3/14*
U.S. Cl. 340—760 6 Claims



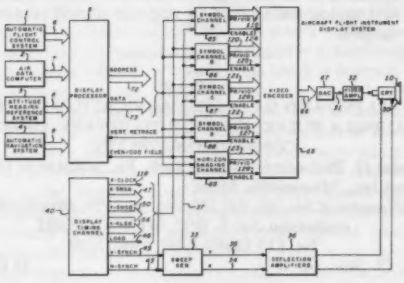
1. A luminescent character display device having a pattern display section composed of a plurality of subsections, one for each digit, said sub-section for each digit being formed of a plurality of anodes disposed in a matrix form and each coated with a fluorescent layer, and said anodes being selectively given anode voltage for display; the device comprising a display tube section composed of an insulating base plate, a plurality of anode wires formed on said base plate and disposed so that they pass the corresponding positions of the respective sub-sections of said pattern display section, an insulating layer laminated on said anode wires and provided with through-holes leading to said anode wires, a plurality of anodes disposed on said insulating layer in a matrix form so as to constitute the sub-section for each digit of the pattern display section and each coated with a fluorescent layer, the anodes disposed at the corresponding positions of the respective sub-sections of the pattern display section being electrically connected in common through the respective anode wires connected thereto through said through-holes, at least one filament cathode provided above said anodes for emitting thermions and bombarding said anodes of said digits with said thermions whereby said fluorescent layer coated on said anodes are excited and made luminous, and a plurality of primary grids disposed between said anodes and said cathode, each said primary grids overlapping all the anodes of only one digit, whereby the thermions emitted from said cathode are selectively accelerated by said grids to the anode of selected digits.

4,149,148

AIRCRAFT FLIGHT INSTRUMENT DISPLAY SYSTEM

Harry Miller, Scottsdale; Parm L. Narveson, Phoenix; William R. Hancock, Phoenix, and Joseph P. Hsu, Phoenix, all of Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 19, 1977, Ser. No. 788,702
Int. Cl.[2] G06K *15/20*
U.S. Cl. 340—721 22 Claims



1. Display apparatus having a display face comprising raster generating means for generating a raster on said display face including digital timing circuit means for providing digital signals synchronous with respect to said raster,
first memory means responsive to said digital signals and having a plurality of storage locations corresponding to a respective plurality of display cells comprising said display face,
said digital signals addressing said storage location corresponding to said display cell associated with the point of said raster being generated,
said storage locations containing symbol defining words each comprising a symbol address field and a symbol shifting field,
said first memory means providing a symbol address signal and a symbol shifting signal corresponding to said symbol address and symbol shifting fields respectively of said symbol defining word stored at said storage location addressed by said digital signals,
symbol shifting and storage means responsive to said symbol address signal and said symbol shifting signal including second memory means responsive to said symbol address signal and having a plurality of symbol storage means for storing a respective plurality of symbols and patterns to be displayed with respect to said display cells, said plurality of symbol storage means being addressed by said symbol address signal for providing symbol display signals in accordance with said symbol or pattern stored in said addressed symbol storage means and shifted in response to and in accordance with said symbol shifting signal, and
display means responsive to said symbol display signals for displaying said symbol or pattern stored in said addressed symbol storage means shifted with respect to said display cell associated with said point of said rester being generated in accordance with said symbol shifting signal.

4,149,149

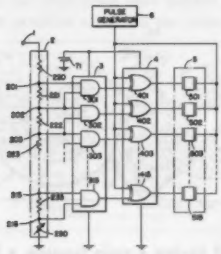
CIRCUIT FOR ACTUATING A DISPLAY WITH AN IMPROVED COMPARATOR

Masayuki Miki, and Nobuaki Miyakawa, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 14, 1977, Ser. No. 768,346
Claims priority, application Japan, Feb. 20, 1976, 51-17052
Int. Cl.[2] G01D *7/00*
U.S. Cl. 340—753 4 Claims

1. In a display circuit for actuating display segments in accordance with an analogue input voltage comprising input means supplied with the analogue input voltage, voltage divider means connected to said input means including a plurality of resistors connected in series for dividing the analogue

input voltage applied to said input means, comparing means connected to said voltage divider means for comparing the divided input voltages with at least one reference voltage to determine the number of the display segments to be activated and actuating means for driving the display segments response



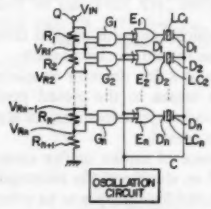
to the output from said comparing means, said comparing means including a logical circuit of at least one metal oxide semiconductor of the type having a threshold voltage which is dependent on the supply voltage applied thereto, the threshold voltage of the semiconductor being utilized for said at least one reference voltage.

4,149,150

DISPLAY DEVICE

Nobuaki Miyakawa, Hitachi, and Masayuki Miki, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 5, 1977, Ser. No. 784,812
Claims priority, application Japan, Apr. 9, 1976, 51-39199
Int. Cl.[2] G06F *3/14*
U.S. Cl. 340—754 **8 Claims**



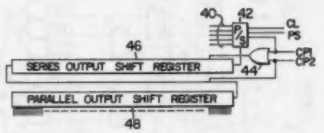
1. A display device for displaying input analog quantities by lighting luminescent display elements, comprising an input terminal for receiving said input analog quantities; a plurality of display elements for displaying said input analog quantities; an arithmetic circuit for dividing each of said input analog quantities into plural ranges and for amplifying each of said divided input quantities up to a predetermined level; a circuit for dividing said predetermined level into plural levels; comparison circuits each provided for said respective divided levels, for determining the lighting of said display elements by comparing said divided levels with a reference signal; a circuit for generating a clock signal for determining the timing of the lighting of said display elements; and drive circuits each connected between said respective comparison circuits and said respective display elements, for delivering effective voltages for lighting said display elements in response to the output signals of said comparison circuits and said clock signal.

4,149,151

DISPLAY DATA SYNTHESIZER CIRCUIT

Yoshiharu Nagae, Hitachi, and Hideaki Kawakami, Mito, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 20, 1977, Ser. No. 798,866
Claims priority, application Japan, May 25, 1976, 51-60390
Int. Cl.[2] G06K *15/18*
U.S. Cl. 340—765 **8 Claims**



1. A display data synthesizer circuit used with a display panel including a multiplicity of display elements for display of a desired pattern by selectively exciting said display elements, said display elements being divided into a plurality of sections to be sequentially scanned and driven, said display data synthesizer circuit serving to synthesize and hold display data for each of said sections for a predetermined period of time in order to selectively excite said display elements in said each section for said predetermined period of time; said display data synthesizer circuit comprising

a series output shift register for receiving bit-serially a plurality of bits of display data for one section of display elements at a first repetitive speed and producing them bit-serially at a second repetitive speed higher than said first repetitive speed; and

a parallel output shift register for receiving the display data from said series output shift register and for holding it for a predetermined period of time, said parallel output shift register producing said display data bit-parallely for driving said display elements in said each section;

said first repetitive speed being so selected that said display data receiving operation of said series output shift register is performed within a time interval during which said parallel output shift register produces said display data.

4,149,152

COLOR DISPLAY HAVING SELECTABLE OFF-ON AND BACKGROUND COLOR CONTROL

Paul M. Russo, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,764
Int. Cl.[2] G06K *15/20*
U.S. Cl. 340—703 **3 Claims**

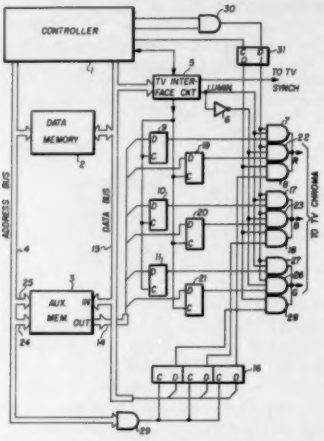
1. In a system for displaying information in color on a raster scan medium, the system including controller means for providing control signals, means responsive to said control signals for supplying in sequence, signals representative of the information to be displayed as an array of on and off dot elements on the raster scan medium, first means responsive to said control signals for supplying first color signals specifying the color of goups of contiguous dot elements forming a subarray when said dot elements are on, and background select means for supplying alternate color signals, the improvement comprising:

second means responsive to said control signals for supplying second color signals specifying the color of the groups of contiguous dot elements when said dot elements are off;

means responsive to said control signals for supplying activating signals indicating an active area is being scanned on said raster scan medium; and

gating means responsive to said signals representative of the information to be displayed and to said activating signals for coupling to said raster scan medium said first color

signals when said dot elements are on and said second color signals when said dot elements are off and to said



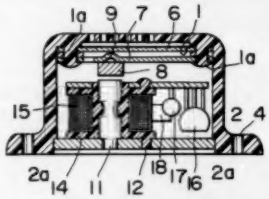
absence of said activating signals for coupling to said raster scan medium said alternate color signals.

4,149,153

CONTACTLESS BUZZER

Youjiro Shigemori, and Yoshio Mitumori, both of Shizuoka, Japan, assignors to Star Seimitsu Kabushiki Kaisha, Japan

Division of Ser. No. 530,410, Dec. 6, 1974, Pat. No. 3,974,499. This application Jun. 9, 1976, Ser. No. 694,309
Claims priority, application Japan, Dec. 12, 1973, 48-144362; Dec. 14, 1973, 48-141504; Feb. 18, 1974, 49-19948
Int. Cl.[2] G08B *3/10*
U.S. Cl. 340—384 E **6 Claims**



1. A contactless buzzer comprising:

a case formed in the shape of a cup, said case having a closed portion and an open portion, said case having first and second mutually parallel and spaced planar surfaces, said first planar surface being located adjacent said closed portion of said case and said second planar surface being located on an edge of said open portion of said case;

an audible sound delivery means including a diaphragm which is supported on the first planar surface of said case;

an electromagnet means for electromagnetically exciting the audible sound delivery means, said electromagnet means including a bobbin which is spaced from the diaphragm and having an axis which is substantially perpendicular to the diaphragm and a winding disposed on the bobbin, said electromagnet means being supported on the second planar surface of said case; and

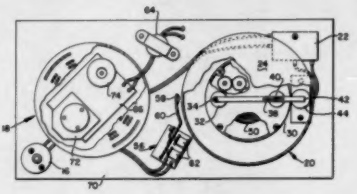
an electronic drive circuit means which cooperates with the winding to form an electronic oscillator circuit.

4,149,154

ALARM BELL AND SYSTEM

Robert A. Whetstone, c/o Factory Parts Warehouse, 2505 Farrington, Dallas, Tex. 75207

Filed Mar. 24, 1977, Ser. No. 780,981
Int. Cl.[2] G08B *19/00, 3/00*
U.S. Cl. 340—521 **1 Claim**



1. An alarm bell having a main housing, a bell dome supported by the housing, a mechanical motor contained within the housing and having a spring means within which energy can be stored, a first clapper actuated by the spring means of the motor for repeatedly striking said dome;

a second clapper, an electric motor connected to actuate said second clapper, means positioning said second clapper such that the clapper strikes said dome when said second clapper is actuated by said electric motor; circuit means including a first switch means by which said electric motor is energized whenever an alarm is to be sounded with said second clapper;

said first clapper being an elongated, relatively flat member, an electromagnet having a coil energized by a source of current, said electromagnet being placed adjacent to said first clapper so that a flat surface of the clapper is magnetically attracted and held in fixed relationship by said electromagnet when the coil thereof is energized to thereby arrest movement of said first clapper;

a second switch means arranged to be actuated by movement of a closure means, said second switch means being connected in series with said coil of said electromagnet; said first clapper includes mount means by which said first clapper is positioned for reciprocating motion such that one end thereof strikes the dome of the bell when reciprocated;

circuit means by which current is applied through said second switch means to said electromagnet;

a smoke detector and a fire detector connected to actuate said first switch means to the closed position, thereby causing said second clapper to sound an alarm whenever smoke and fire is sensed;

whereby the presence of smoke or fire causes the second clapper to sound an alarm and the interruption of electrical power causes the first clapper to be released from said electromagnet to sound an alarm.

4,149,155

APPARATUS FOR DISPLAYING PLANT DATA

Shoichi Kishi, Sagamihara; Takaharu Fukuzaki, Koganei, and Yukio Nagaoka, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 8, 1977, Ser. No. 785,850
Claims priority, application Japan, Apr. 9, 1976, 51-39355
Int. Cl.[2] G08B *29/00*
U.S. Cl. 340—524 **9 Claims**

1. An apparatus for displaying plant data comprising:

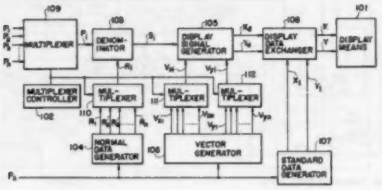
first means, responsive to the present value of a main plant data signal, for providing a normal value signal for each of a plurality of plant data signals, which normal value signal corresponds to the present value of the main plant data signal;

second means, responsive to said first means, for normalizing

the plant data signals with the normal value signal derived from said first means;

third means for generating position vector signals which determine the position at which the normal value signals is indicated in a picture plane of a display means, in response to the present value signal of the main plant data signal;

fourth means for generating data display signals which determine the position at which the present value signal of



each of the plant data signals is indicated in the picture plane of said display means, in response to the normalized value signal derived from the second means and the position vector signals from the third means; and

fifth means for generating a standard picture of which the magnitude is determined corresponding to that of the present value signal of the main plant data signal,

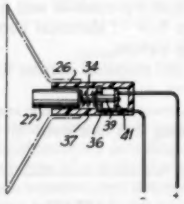
said display means displaying both the data display signals derived from the fourth means and the standard picture.

4,149,156

WINDOW ALARM EMPLOYING A RELEASABLY MOUNTED PLUNGER SWITCH

Leonard Blasucci, 98 Roosevelt Ave., Jersey City, N.J. 07304

Filed Jun. 10, 1977, Ser. No. 805,508
Int. Cl.[2] G08B *13/08*
U.S. Cl. 340—545 **16 Claims**



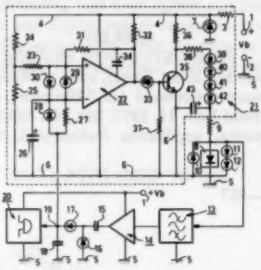
1. A device for signalling the unwanted opening of either section of a closure means in two sections, at least one section of which is mounted for sliding past the other section, said closure means having an inner-section and an outer-section, and each section having an inner face with respect to an enclosure, said device comprising a sensor including means for releasably attaching same to the inner face of said outer-section proximate said inner-section so that movement of one section relative to the other in the direction for opening said closure means will dislodge said sensor, and signalling means operatively associated with said sensor for indicating the dislodgement of said sensor.

4,149,157

RECEIVER FOR A HF-INTRUSION DETECTION SYSTEM

Serge Guennou, Croisy-sur-Seine, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 24, 1977, Ser. No. 799,960
Claims priority, application France, May 26, 1976, 76 15985
Int. Cl.[2] G08B *13/24*
U.S. Cl. 340—554 **10 Claims**



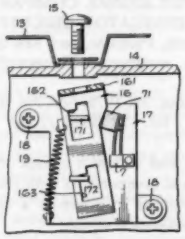
1. A receiver for a high frequency intrusion detection system comprising, a detection diode for detecting high frequency energy received by the receiver and for deriving a control signal determined by said received energy, the detection diode being of the type that exhibits a variation in its detection sensitivity as a function of the amplitude of a direct current flowing through said diode, an alarm device which is triggered into operation upon a given change in the amplitude of a signal applied to its input, a current source having a control terminal for receiving a control signal that controls the amplitude of direct current supplied by the current source, means connecting the detection diode to the current source so that the current source supplies a direct current to the diode that controls its detection sensitivity, and a feedback circuit coupling the output of the detection diode to the input of the alarm device and to the control terminal of the current source, the feedback circuit having a delay time for compensating amplitude changes in said control signal which have a frequency below a predetermined value.

4,149,158

SECURITY SYSTEM FOR CATV TERMINAL

Takeshi Iwaoka, and Shigeki Koike, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 10, 1977, Ser. No. 795,378
Claims priority, application Japan, May 11, 1976, 51-53665
Int. Cl.[2] G08B *13/02*
U.S. Cl. 340—568 **8 Claims**



1. A terminal unit for CATV systems comprising a terminal unit housing for containing circuit parts or the like, a terminal unit cover for closing said housing, coupling means for coupling said housing and said cover, electromechanical detecting

means for detecting release of said coupling means, said detecting means including means shifting to a position in which said coupling means cannot recouple said housing and said cover after release of said coupling means, a signal generator circuit for generating signals in response to the detection of operation of said detecting means, and a signal transmitting circuit for transmitting the output signal from said signal generator circuit to the head end so as to indicate the release of said coupling means to the head end.

4,149,159

FIRE DETECTION SYSTEM

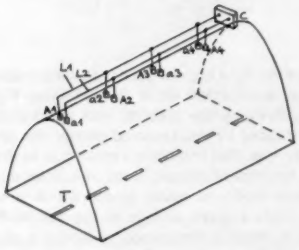
Fritz Dätwyler, and Ernst Huber, both of Männedorf, Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Filed Nov. 11, 1977, Ser. No. 850,789

Claims priority, application Switzerland, Nov. 16, 1976, 14378/76

Int. Cl.[2] G08B *17/06, 17/10*

U.S. Cl. 340—587 **8 Claims**



1. A fire detection system of the type for monitoring an extensive area by means of a plurality of fire detector pairs connected to a fire detection center by means of at least two parallel lines, the individual detectors of each pair being connected to different lines, with the center signalling an alarm only if it receives signals simultaneously from both said parallel lines that at least one detector connected to each of said parallel lines has been activated,

the improvement therein comprising that each of said pairs of detectors includes a first detector having a first sensitivity and a second detector having a substantially different, second sensitivity, said detectors being connected to said parallel lines so that along each of said parallel lines there are connected alternately detectors of said first sensitivity and detectors of said second sensitivity.

4,149,160

MULTI-INPUT SIGNAL COMPARATOR AND INDICATOR CIRCUIT

Theodore B. Bozarth, Perkasie, and Martin Zielinski, Maple Glen, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 30, 1978, Ser. No. 873,100

Int. Cl.[2] G08B *21/00*

U.S. Cl. 340—661 **6 Claims**

1. A comparator and indicator circuit comprising

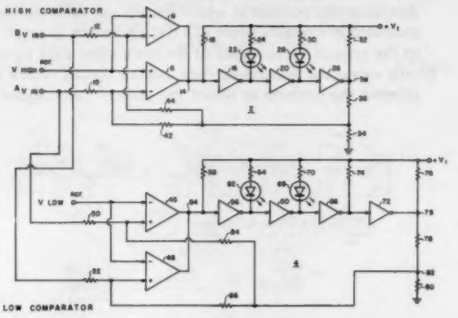
a plurality of signal comparators with each of said comparators being arranged to compare a corresponding input signal with a reference signal,

a first signal inverter circuit,

means connecting all of the output signals from said comparators to an input of said inverter means,

a first visual indicator means connected to an output of said comparator means to provide a visual indication of the state of an output signal from said comparator means,

a second signal inverter means arranged to invert an output signal from said first inverter means, and



a second indicator means connected to an output of said second inverter means to provide a visual indication of a state of an output signal from said second inverter means.

4,149,161

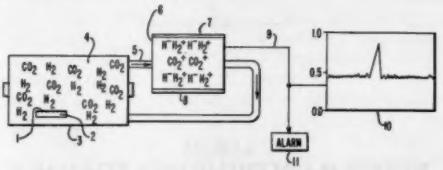
PROTECTING ELECTRICAL APPARATUS WITH GAS GENERATING COMPOUNDS

David C. Phillips, Penn Hills, and James D. B. Smith, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 16, 1976, Ser. No. 751,403

Int. Cl.[2] G08B *21/00*

U.S. Cl. 340—632 **8 Claims**



1. A method of detecting overheating in electrical apparatus cooled by a hydrogen stream, comprising

(1) applying a coating to a position in said electrical apparatus which is exposed to said hydrogen stream, said coating containing a compond which decomposes between 80° and 200° C. to produce a gas heavier than hydrogen;

(2) ionizing at least a portion of said hydrogen stream and measuring the flow of electrical current across said ionized hydrogen stream;

(3) monitoring said electrical current for an increase in said electric current; and

(4) using said increase in said electric current as an indication that overheating has occurred in said electrical apparatus.

4,149,162

BATTERY DISCRIMINATOR CIRCUIT FOR SMOKE DETECTORS

Robert B. Enemark, Duxbury, and Paul S. Richtarcsik, Whitman, both of Mass., assignors to American District Telegraph Company, Jersey City, N.J.

Filed Jun. 20, 1977, Ser. No. 808,065

Int. Cl.[2] G08B *21/00, 17/10*

U.S. Cl. 340—636 **7 Claims**

1. Battery powered alarm apparatus comprising:

power terminals for connection to a battery;

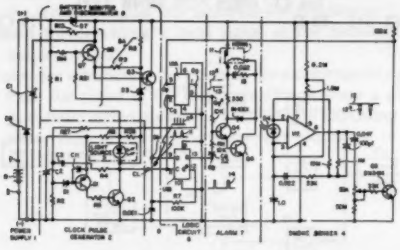
means for detecting an alarm condition;

alarm means responsive to the detecting means for signalling alarm condition, at least one of the detecting and alarm

means being connected as a load across the battery terminals; and

means for sensing the battery internal impedance under load so as to actuate the alarm means when the battery impedance exceeds a preselected value,

wherein said battery impedance sensing means comprises:



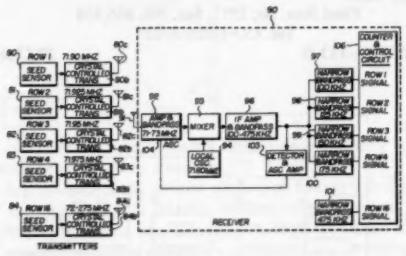
a capacitance and means connecting the capacitance substantially directly and non-resistively to the power terminals so that substantially the full battery voltage is stored in the capacitance, and

means for comparing the stored battery voltage and an IR drop dependent on battery current, the comparing means including respective inputs for the stored voltage and IR drop and an alarm output.

4,149,163
WIRELESS SEED DETECTING AND MONITORING APPARATUS

George H. Fathauer, Mesa, Ariz., assignor to Dickey-john Corporation, Auburn, Ill.

Continuation of Ser. No. 629,889, Nov. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 592,555, Jan. 22, 1975, abandoned. This application May 6, 1977, Ser. No. 794,551
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—684 6 Claims

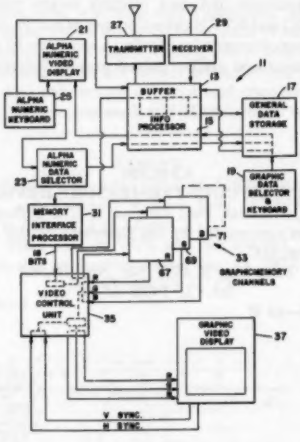


1. A detecting and monitoring system particularly adapted for individually and simultaneously detecting the flow of seeds being dispensed in each row of a multi-row planting machine of the type which has a separate seed dispenser for each row and which is towed by a tractor, and for conveying said seed flow information to the operator of the tractor, comprising: a plurality of sensing means respectively associated with each said dispenser and responsive to the passage of seeds through said dispensers for generating asynchronously a corresponding plurality of control signals; a corresponding plurality of oscillating means respectively associated with said plurality of sensing means for generating a plurality of unmodulated carrier-wave seed signals, with each said oscillating means having a different frequency of oscillation and respectively responsive to one of said control signals for being energized to generate and wirelessly transmit a unmodulated carrier-wave seed signal corresponding to the flow of seeds passing through the respective one of said dispensers; receiving means responsive to said transmitted unmodulated carrier-wave seed signals for individually and simultaneously detecting said seed signals and producing corresponding indicator signals, said receiving means including a single-channel intermediate frequency amplifier circuit having a pass band which encompasses the frequencies of all said transmitted seed signals, and further including a corresponding plurality of frequency detectors coupled to said single-channel intermediate frequency amplifier circuit, with each said frequency detector being tuned to a different one of said transmitted unmodulated carrier-wave seed signal frequencies for detecting said seed signals and producing said indicator signals; and display means responsive to said indicator signals for displaying selectively the flow of seeds being dispensed in each row of a multi-row planting machine.

4,149,164
DIGITAL PLOTTING SYSTEM FOR GRAPHIC INFORMATION

Edward R. Reins, Monterey, and Robert W. Herman, Laguna Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 27, 1977, Ser. No. 864,286
Int. Cl.[2] G06K *15/20*
U.S. Cl. 340—701 23 Claims



1. A digital plotting system comprising:

(a) a data storage device, a data selector, a memory interface processor and at least one graphic memory channel;

(b) the output of said data selector device being connected to said data storage device for selecting particular data that is represented in binary format;

(c) the output of said data storage device being connected to the input of said memory interface processor;

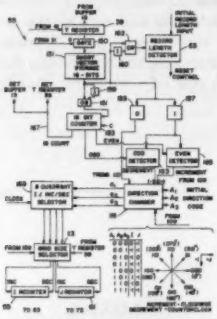
(d) the output of said memory interface processor being applied to said at least one graphic memory channel; whereby

(e) said memory interface processor decodes said particular data and stores said data on said graphic memory channel as a graphic display.

4,149,165
DIGITAL PLOTTING SYSTEM FOR DISPLAYING CURVED LINE INFORMATION

Robert W. Herman, Laguna Beach, and Edward R. Reins, Monterey, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 27, 1977, Ser. No. 865,076
Int. Cl.[2] G06K *15/20*
U.S. Cl. 340—740 14 Claims

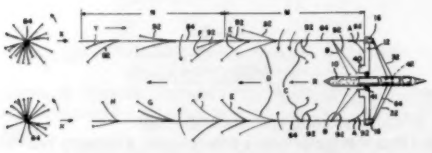


1. A digital plotting system comprising:
(a) processor means for processing a binary coded signal representing predetermined graphic information;
(b) said processor including an ODD and EVEN detection means for sensing ODD and EVEN bits in said binary coded signal;
(c) said processor including a binary "1" and "0" detection means for sensing "1" and "0" bits in said binary coded signal; and
(d) said processor including plotting means responsive to said ODD and EVEN detection means and to said "1" and "0" detection means for plotting a sequence of grid points to represent said predetermined graphic information.

4,149,166
DOPPLER COUNTERMEASURE DEVICE

Fay E. Null, Shalimar, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 9, 1961, Ser. No. 108,960
Int. Cl.[2] F42B *13/56*
U.S. Cl. 343—18 E 34 Claims

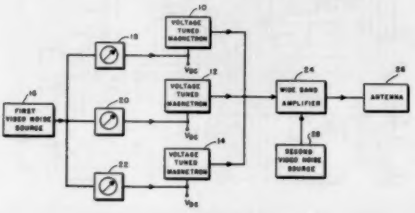


1. A Doppler decoy protection device comprising a missile capable of being launched from a space craft whose protection is sought, and to travel in advance thereof and at a speed greater than the speed of said space craft, guide means extendable rearwardly from said missile, Doppler decoy means slidable on said guide means for simulating the Doppler characteristics of the craft whose protection is sought, means for damping the speed of travel of said decoy means rearwardly on said guide means so that the resultant forward speed of said decoy means will substantially equal the speed of the craft whose protection is sought.

4,149,167
RADAR JAMMING TRANSMITTER

Philip H. Peters, Jr., Schenectady, and Donald A. Wilbur, Albany, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 4, 1955, Ser. No. 492,327
Int. Cl.[2] G01S *7/38;* H04K *3/00*
U.S. Cl. 343—18 E 11 Claims

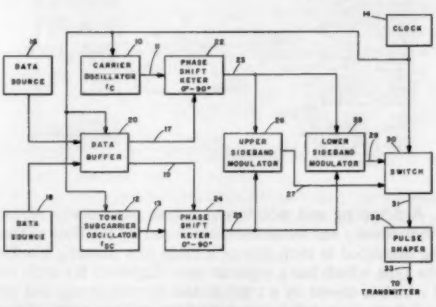


1. An automatic radar jamming transmitter comprising a plurality of voltage-tuned magnetrons each adapted to be tuned over a prescribed wide range of frequencies, discrete voltage tuning means in circuit with each of said magnetrons respectively whereby each of said magnetrons initially and simultaneously generate radio-frequency energy at prescribed discrete frequencies, means for simultaneously varying said discrete voltage tuning means in a random manner whereby the discrete outputs of said magnetrons comprise simultaneously generated frequency modulated noise signals, means for amplifying said noise signals, and means in circuit with said amplifying means for producing random changes in the amplitudes of said noise signals.

4,149,168
SEQUENTIALLY BALANCED MODULATION TONE RANGING SYSTEM AND METHOD

Eddy Hose, Del Mar, Calif., assignor to Cubic Corporation, San Diego, Calif.

Filed Nov. 30, 1977, Ser. No. 855,924
Int. Cl.[2] G01S *3/02*
U.S. Cl. 343—112 D 20 Claims



1. A ranging system, comprising
a first system for producing a modulation tone ranging signal for transmission comprising
means for providing a carrier signal of a first frequency;
means for providing a tone signal of a second frequency;
means for mixing the carrier signal with the tone signal to produce an upper sideband signal at a frequency equal to the sum of the first and second frequencies and to produce a lower sideband signal at a frequency equal to the difference of the first and second frequencies; and
means for separately and sequentially providing the upper and lower sideband signals to produce a sequentially

balanced modulation tone ranging signal for transmission; and

a second system for producing a phase shift information signal from a received said sequentially balanced modulation tone ranging signal, comprising

means for processing the received signal to produce a measurement signal containing the phase information of the received signal at a measurement frequency;

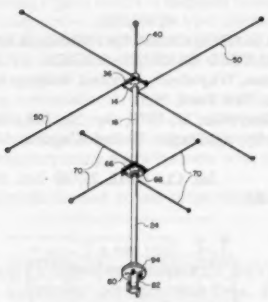
means for providing a local signal at the measurement frequency; and

means for subtracting the phase of the measurement signal from the phase of the local signal to produce a phase shift information signal for sequentially indicating the phase shift in the upper and lower sidebands of the received signal.

4,149,169
CONFIGURATION OF TWO ANTENNAE WITH SIGNAL ISOLATION

John W. Weber, Kendallville, Ind., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 20, 1978, Ser. No. 871,045
Int. Cl.[2] H01Q *1/48, 9/38, 21/00*
U.S. Cl. 343—846 **13 Claims**



1. An antenna configuration comprising an inner tubular element of conducting material;

a first antenna of the ground plane type having a first radiating element and a plurality of first radial elements;

a first transmission line extending through said inner tubular element with one conductor connected via an electrically conductive path to said first radiating element and another conductor connected via an electrically conductive path to said first radial elements;

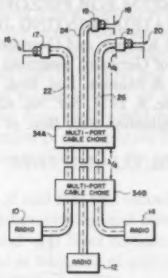
a second antenna comprising a plurality of second radial elements and a first sleeve in tubular form around said inner tubular element between said first radial elements and said second radial elements, said first sleeve being electrically conductively connected to the inner tubular element at its end nearest the second radial elements and being electrically insulated for its remaining length; said second radial elements being electrically insulated from the inner tubular element;

a second transmission line extending through said inner tubular element with one conductor connected via an electrically conductive path to said second radial elements and another conductor connected via an electrically conductive path to said first sleeve at its end nearest the second radial elements.

4,149,170
MULTIPORT CABLE CHOKE

Donn V. Campbell, Eatontown, N.J., and James J. Arnold, deceased, late of Farmingdale, N.J. (by Susan Arnold, executrix), assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 748,990, Dec. 9, 1976, abandoned, which is a continuation of Ser. No. 614,283, Sep. 17, 1975, abandoned. This application Apr. 28, 1978, Ser. No. 900,831
Int. Cl.[2] H01Q *1/52*
U.S. Cl. 343—885 **16 Claims**

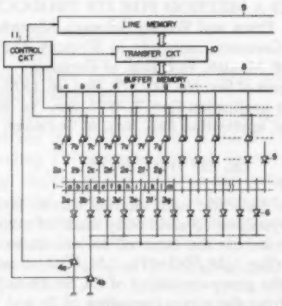


1. In combination, a plurality of electromagnetic wave transmission lines each interconnecting one group of electrical apparatus and another group of electrical apparatus, and at least one multiport choke means for preventing buildup of undesired radio frequency currents along the external portions of said wave transmission lines, said multiport choke means comprising a single core having a plurality of windings of the same number of turns adjacently wound on said core in the same direction, said windings each comprising an electrical conductor means with a shield member, each of said windings being continuous with a corresponding one of said wave transmission lines, said multiport choke means further including a direct electrical connection adjacent said core between said choke shield members at each end of said choke windings.

4,149,171
THERMAL RECORDING METHOD

Kunio Sato, and Yasuyuki Kojima, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 24, 1978, Ser. No. 871,802
Claims priority, application Japan, Jan. 27, 1977, 52/8074
Int. Cl.[2] G01D *15/10*
U.S. Cl. 346—1 **2 Claims**



1. In a thermal recording method wherein, using a thermal recording head in which respectively adjacent heating resistor sections are connected to a control circuit by common lead electrodes, voltages are sequentially applied between the lead

electrodes connected to the sequentially selected heating resistor sections so as to cause currents to flow to these heating resistor sections, thereby causing them to develop heat and coloring a thermally responsive recording paper lying in contact with said thermal recording head, a thermal recording method characterized in that the sequential selection is executed a plurality of cycles and that the period of time of the voltage application, τ_0 is made $\tau_0 \approx \tau/n$ where τ denotes the period of time required for the coloration and n denotes the number of cycles in the sequential selection.

4,149,172

INK SUPPLY SYSTEM FOR PIEZOELECTRICALLY OPERATED PRINTING JETS

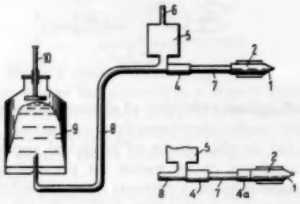
Joachim Heinzl; Erich Kattner, and Guenther Rosenstock, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 9, 1975, Ser. No. 639,119

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1974, 2460573

Int. Cl.[2] G01D *15/18*

U.S. Cl. 346—140 R **1 Claim**



1. An ink jet printer comprising a piezoelectrically operated printing jet including a piezoelectric transducer, an ink reservoir disposed at a level lower than said printing jet and said piezoelectric transducer to produce a static vacuum condition at said printing jet, conduit means operatively interconnecting said printing jet and said reservoir, a capillary filter mounted in said conduit in close proximity to said printing jet and above said ink reservoir for removing air from the ink as it flows from said reservoir to said printing jet and for preventing the depletion of ink in said conduit on the upstream side of said capillary filter upon penetration of air into said printing jet, and an air receiver and vent mounted in said conduit upstream of said capillary filter immediately at an upstream face of the filter vertically above the face for receiving air removed from the ink by said capillary filter.

4,149,173

CAPACITOR DIELECTRIC WITH INTERNAL BARRIER LAYERS AND A METHOD FOR ITS PRODUCTION

Helmut Schmelz, Prien, and Werner Schwaen, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

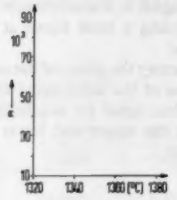
Continuation-in-part of Ser. No. 815,579, Dec. 26, 1978, Pat. No. 4,131,903. This application Dec. 7, 1977, Ser. No. 858,153

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1976, 2659672

Int. Cl.[2] H01L *29/12*

U.S. Cl. 357—10 **11 Claims**

1. A capacitor dielectric with internal barrier layers comprising: a polycrystalline ceramic body made of material of a perovskite structure on the basis of barium titanate of the general formula $(Ba_{1-x}M_x^{II})O \cdot z(Ti_{1-y}M_y^{IV})O_2$ in which M^{II} is selected from the group consisting of Ca, Sr, Pb and Mg and M^{IV} is selected from the group consisting of Zr and Sn and z assumes the values 1.005 to 1.05; at least two different doping substances one of which causing predominantly n conduction inside the crystallites and the other causing predominantly p conduction in a surface layer of the crystallites; a proportion of the doping substance causing the n conduction being 1.5 to 2.5 times greater than the maximum doping quantity and a proportion of the substance causing the p conduction amounting to 0.01 to 0.15% by weight; the capacitor dielectric comprising two crystalline main phases of different composition which are present in roughly the same quantities and of which the first is substituted barium titanate of the formula $(Ba_{1-x1}M_{x1}^{II})O \cdot z($-



$Ti_{1-y1}M_{y1}^{IV})O_2$ provided with doping substances causing n conduction and p conduction and the second crystalline main phase is substituted barium titanate of the formula $(Ba_{1-x2}M_{x2}^{II})O \cdot z(Ti_{1-y2}M_{y2}^{IV})O_2$ provided with doping substances causing n conduction and p conduction x_1, y_1, x_2, and y_2 assuming a value between 0 and 1.

4,149,174

MAJORITY CHARGE CARRIER BIPOLAR DIODE WITH FULLY DEPLETED BARRIER REGION AT ZERO BIAS

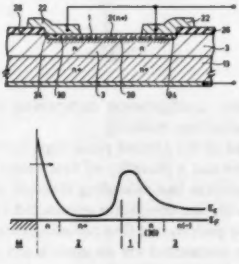
John M. Shannon, Whyteleafe, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 22, 1977, Ser. No. 780,004

Claims priority, application United Kingdom, Mar. 24, 1976, 11835/76

Int. Cl.[2] H01L *29/90*

U.S. Cl. 357—13 **16 Claims**

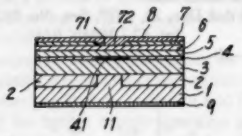


1. A semiconductor device comprising a semiconductor body including first and second semiconductor regions of one conductivity type separated by a barrier region having a net activator concentration of the opposite conductivity type, means for providing a current path in said body between said first and second regions across said barrier regions, the current flow through said barrier region being by charge carriers of said one conductivity type, said first region having a higher doping concentration of the one conductivity type than the second region, said barrier region being sufficiently thin that the depletion layers formed at zero bias with both said first and second regions merge together in said barrier region to substantially deplete at zero bias the whole of said barrier region of mobile charge carriers of both said one and opposite conductivity types.

4,149,175
SOLIDSTATE LIGHT-EMITTING DEVICE

Morio Inoue; Kunio Itoh, and Kunihiko Asahi, all of Takatsuki City, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma City, Japan

Continuation of Ser. No. 693,471, Jun. 7, 1976, abandoned. This application Jan. 30, 1978, Ser. No. 873,522
Claims priority, application Japan, Jun. 20, 1975, 50-75902
Int. Cl.[2] H01L *33/00*; H01S *3/19*
U.S. Cl. 357—18 11 Claims



1. A solid state light emitting device comprising on a semiconductor substrate, a light emitting portion which emits light by injection of a carrier, wherein

said substrate has a stripe-shaped mesa part defined by a surrounding epitaxial layer of higher resistivity isolating regions which layer has a low impurity concentration, the top surfaces of said mesa part and the surrounding higher resistivity isolating regions being level with respect to each other thereby forming a flat surface,

said light-emitting portion comprising at least two epitaxial growth regions of semiconductor crystal each of different conductivity types, said epitaxial growth regions including, in combination, a light-emitting active region therein, a neighboring region which is disposed contiguous to said light-emitting active region with a p-n junction inbetween, said epitaxial growth regions being formed upon said flat surface to cover said mesa part and said higher resistivity isolating regions,

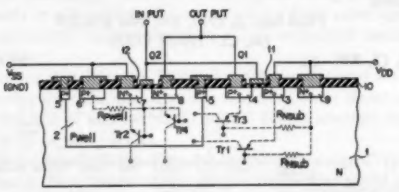
an overlying semiconductor layer formed on said light-emitting portion having a p-n junction inbetween, said overlying semiconductor layer having a stripe-shaped opening therein which opening is in alignment with the underlying mesa part, and

a metal electrode formed in said stripe shaped opening.

4,149,176
COMPLEMENTARY MOSFET DEVICE

Kazuo Satou, Yokohama, and Mitsuhiko Ueno, Fujisawa, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 706,125, Jul. 16, 1976, abandoned. This application Nov. 16, 1977, Ser. No. 851,955
Claims priority, application Japan, Jul. 18, 1975, 50-87396; Jul. 18, 1975, 50-87398
Int. Cl.[2] H01L *27/02*
U.S. Cl. 357—42 9 Claims



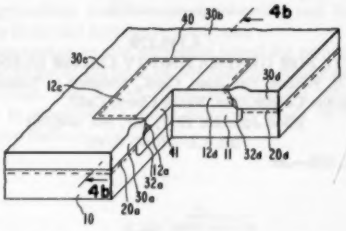
1. In a semiconductor device which comprises a semiconductor substrate of one conductivity type; a well layer formed in the surface of said substrate with the opposite conductivity type to the substrate the intersection of said well layer and the surface of said substrate defining a boundary edge between said substrate and said well layer comprising an edge of said substrate and an edge of said well layer; first drain and source regions in said substrate forming a first MOS transistor of one channel type in the substrate; and second drain and source regions in said well layer forming a second MOS transistor in the well layer with the opposite channel type to said one channel type MOS transistor and, in the presence of impulse noise, said semiconductor device resulting in at least one first and second parasitic bipolar transistor, said first parasitic bipolar transistor having a base comprising said substrate and further comprising one of said first drain and source regions and said well layer and said second parasitic transistor having a base comprising said well layer and further comprising one of said second drain and source regions and said substrate; said substrate further including a first contact region formed with the same conductivity type as said substrate; said well layer further including a second contact region formed with the same conductivity type as said well layer; first and second contact holes respectively formed in the surface of said first and second contact regions, said first and second contact regions being connected to respective power sources through said first and second contact holes respectively; the improvement comprising:

at least one edge of said first and second contact holes being positioned a distance from said boundary edge between said substrate and well layer sufficiently short to suppress the operation of at least one of said first and second parasitic bipolar transistors.

4,149,177
METHOD OF FABRICATING CONDUCTIVE BURIED REGIONS IN INTEGRATED CIRCUITS AND THE RESULTING STRUCTURES

Martin J. Alter, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Sep. 3, 1976, Ser. No. 720,550
Int. Cl.[2] H01L *27/04*
U.S. Cl. 357—50 42 Claims



1. A structure comprising:

a semiconductor silicon substrate;

a semiconductor silicon epitaxial layer disposed upon one surface of said substrate;

a buried layer formed between selected portions of the substrate and the epitaxial layer to thereby create a laterally extending PN junction forming an isolation barrier between regions of said substrate and epitaxial layer;

said epitaxial layer including at least one epitaxial silicon pocket electrically isolated from surrounding regions of the epitaxial layer by an annular-shaped region of insulating material extending through said epitaxial layer to said PN junction;

a sink region of differing conductivity from said epitaxial layer formed in said at least one silicon pocket;

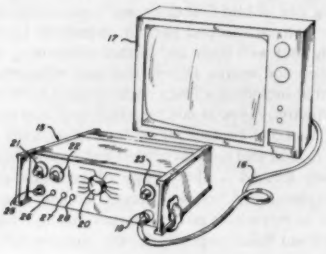
a conductive buried region disposed in the pocket adjacent selected portions of said annular-shaped region of insulating material and adjacent the intersection of the epitaxial layer and the buried layer.

4,149,178

PATTERN GENERATING SYSTEM AND METHOD

Earl M. Estes, Canon City, Colo., assignor to American Technology Corporation, Canon City, Colo.

Filed Oct. 5, 1976, Ser. No. 729,736
Int. Cl.[2] H04N 9/62, 7/02
U.S. Cl. 358—10 **33 Claims**



1. A pattern generating system for servicing an electronic unit having an image display, said system comprising:

synchronizing signal generating means;

reference signal generating means providing a non-color input;

signal defining means including multiplexer means connected with said synchronizing signal generating means and reference signal generating means, said signal defining means producing a predetermined multiplexed output; and

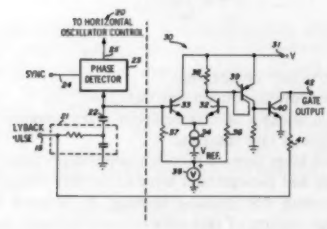
signal processing means connected to receive said multiplexed output from said signal defining means, said signal processing means including means responsive to said multiplexed output providing a system output signal that causes a GRAY QUAD test pattern to be produced by quadrants on an image display of an electronic unit connected with said system for servicing with each of said quadrants capable of being of a different shade of gray with respect to other quadrants.

4,149,179

CIRCUIT FOR GENERATING TV COLOR BURST GATE

Milton E. Wilcox, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 22, 1977, Ser. No. 808,751
Int. Cl.[2] H04N 9/46
U.S. Cl. 358—20 **7 Claims**



1. In a color television receiver capable of responding to a color subcarrier burst signal transmitted during the horizontal blanking interval, said receiver including means for generating a flyback pulse having a duration equal to the horizontal flyback period, color burst gating pulse producing means comprising:

integrating means responsive to said flyback pulse for generating a sawtooth voltage waveform, said sawtooth having a zero crossing located in the center portion of said flyback pulse;

means responsive to said zero crossing to produce a control pulse; and

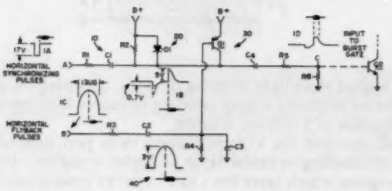
means responsive to said control pulse to clamp the first half of said flyback pulse for producing an output gating pulse in time coincidence with said color subcarrier burst signal.

4,149,180

BURST GATING SIGNAL GENERATING CIRCUIT

John D. Lovely, Batavia, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 22, 1977, Ser. No. 863,133
Int. Cl.[2] H04N 9/46
U.S. Cl. 358—20 **10 Claims**



1. A burst gating signal generating circuit comprising:

(a) a differentiating circuit having an input coupled to a source of sync pulses;

(b) a clipping circuit coupled to the differentiating circuit so that pulses of a desired polarity remain substantially intact and pulses of the opposite polarity are clamped at a predetermined amplitude, whereby the resultant pulses comprise the desired polarity pulses decaying at an exponential rate;

(c) switching means having a first terminal connected to the differentiating circuit and a second terminal coupled to a source of potential;

(d) a phase-delaying and biasing circuit having an input coupled to a source of flyback pulses and having a source of current coupled to a third terminal of the switching means, said circuit for phase-delaying the flyback pulses and coupling them to the third terminal substantially coincidentally with the burst signal; and

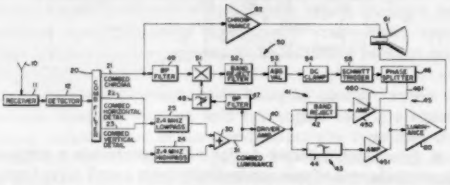
(e) a coupling circuit connected between the first terminal and an output terminal for providing a burst gating signal to an input of a burst gate.

4,149,181

SIGNAL-DEPENDENT CHROMINANCE SUBCARRIER FILTERING CIRCUIT

Kenneth J. Burdick, Wyoming; Wilfred L. Hand, Clarence; Arthur H. Klein, Attica, and Charles B. Neal, Batavia, all of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Sep. 2, 1977, Ser. No. 830,219
Int. Cl.[2] H04N 9/535
U.S. Cl. 358—31 **14 Claims**



1. In a television receiver having a composite video channel being the sum of a chrominance channel and a luminance channel, and the luminance output being separated from said video channel, a method for removing chrominance subcarrier

components from said luminance channel output comprising the steps of:

separating said luminance channel into distinct subchannels comprising a first subchannel having a filter providing an amount of attenuation at the chrominance subcarrier signal frequency that is greater than that provided at frequencies below it,

applying the outputs of said subchannels to the signal inputs of a gating means,

applying the chrominance signal to a first input of a detection circuit and a portion of the luminance signal through a phase-compensating element to a second input of said detection circuit, and

coupling the output of said detection circuit to a control input of said gating means so that the output of said gating means is representative of the output of said first subchannel whenever the output of said detection circuit is at a first predetermined logic level.

4,149,182

COLOR SIGNAL MODULATING SYSTEM

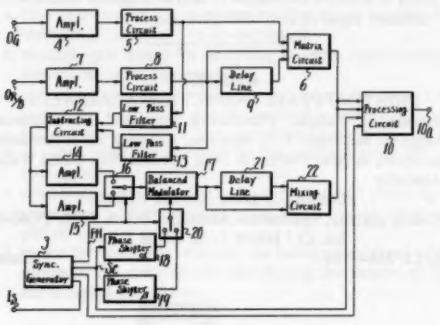
Seisuke Yamanaka, Mitaki, and Toshimichi Nishimura, Tama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 25, 1978, Ser. No. 872,063

Claims priority, application Japan, Jan. 31, 1977, 52-9562

Int. Cl.[2] H04N *9/07*

U.S. Cl. 358—43 **8 Claims**



1. A color signal modulating system for a color television camera having a transducer for converting optical images into two color signals which correspond to two of three primary colors of said image, said two color signals being generated alternately in a line sequential manner and a third color signal being generated consecutively in a line sequential manner comprising:

means for developing a first color difference signal representing the difference between said third color signal and a first one of said two color signals during alternate lines of scan of said camera,

means for developing a second color difference signal representing the difference between said third color signal and the second one of said two color signals,

carrier signal generating means,

modulation means for modulating said carrier signals by said first and second color difference signals alternately line-by line, and

means for deriving said sequentially modulated first and second color difference signals simultaneously at an output of said color signal modulating system.

4,149,183

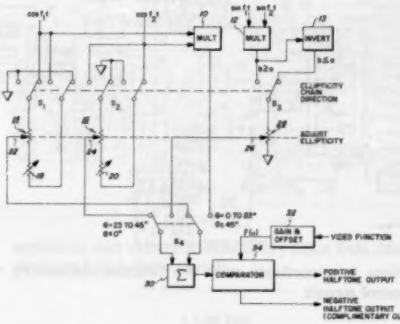
ELECTRONIC HALFTONE GENERATOR

Ronald J. Pellar, and Leland D. Green, both of Sierra Madre, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 21, 1976, Ser. No. 688,669

Int. Cl.[2] H04N *1/40*

U.S. Cl. 358—75 **6 Claims**



1. Apparatus for converting an electrical analog input signal representing an image into a corresponding output signal in the form of a dot pattern, said analog input signal being a video signal representing the optical density variations of an original color image comprising:

means for generating a time-varying electrical function, said time-varying function comprising a predetermined combination of a first periodic signal of a first frequency and a second periodic signal of a second frequency, said first frequency being independent of said second frequency,

means for accepting said video signal as a series of successive scans during the generation of each dot which will form said dot pattern,

means coupled to said generating means and said accepting means for comparing successive scans with said function and generating a difference signal when said function differs from said successive scans, and

means responsive to said difference signal for providing an output signal in the form of dot pattern corresponding to said image, said output signal modulating a laser light beam to reproduce a color half-tone image on a laser sensitive medium.

4,149,184

MULTI-COLOR VIDEO DISPLAY SYSTEMS USING MORE THAN ONE SIGNAL SOURCE

Gary M. Giddings; Glen G. Langdon, Jr., both of San Jose, Calif.; Alfred S. Malowany, Montreal, Canada, and Robin Williams, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1977, Ser. No. 856,680

Int. Cl.[2] H04N *9/535*

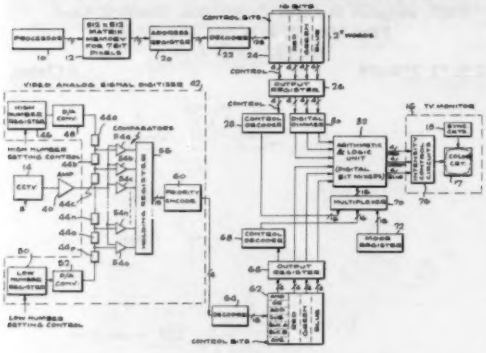
U.S. Cl. 358—81 **17 Claims**

1. Apparatus for selectively combining signals representative of two electrically independent image sources to provide a combined signal suitable for controlling a display, comprising:

means responsive to the signals for generating separate sequential bit coded representations thereof,

means responsive to the data values contained in at least one of the sequential representations for generating sequential digital control signals for dynamically controlling the logical combination of individual bit coded representations in the sequences; and

digital mixing means responsive to the control signals and to the bit coded representations for combining the represen-



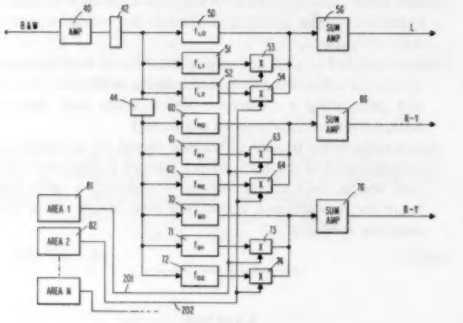
tations in accordance with the function defined by the control signals.

4,149,185

APPARATUS AND METHOD FOR ANIMATED CONVERSION OF BLACK AND WHITE VIDEO TO COLOR

Ralph Weinger, 7819 Deer Run Rd, Philadelphia, Pa. 19118

Filed Mar. 4, 1977, Ser. No. 774,634
Int. Cl.[2] H04N *1/46, 9/535, 9/04*
U.S. Cl. 358—81 **58 Claims**



1. Apparatus for color conversion of an input video signal, said input video signal representing a plurality of frames defining a moving image, comprising:

a. a first circuit path having first function means for color modifying said input video signal according to a first predetermined function, thereby producing a first color converted signal;

b. a second circuit path controlled independently of said first path, comprising second function means for providing video color conversion according to a second predetermined function, in combination with area modifying means for video transformation which provides modification of an area of the image defined by a video signal, said second function means and said area modifying means being operatively combined to transform said input video signal into a second area-modified color converted signal; and

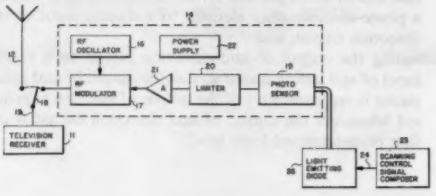
c. combining means for combining said first and second signals.

4,149,186

METHOD AND APPARATUS FOR APPLYING A SCANNING CONTROL SIGNAL TO A TELEVISION RECEIVER

David H. Chung, 4046 Ben Lomond Dr., Palo Alto, Calif. 94306, and Frederic S. Haynes, 19 Laburnum Rd., Atherton, Calif. 94025

Filed May 9, 1977, Ser. No. 795,020
Int. Cl.[2] H04N *5/00;* H04B *9/00*
U.S. Cl. 358—83 **7 Claims**



3. Apparatus for applying a scanning control signal to a television receiver comprising the combination of:

means to generate a radio frequency carrier signal;

means to modulate said carrier signal with a scanning control signal;

means connected to the input of said modulation means to receive optical radiation defining completely a scanning control signal and convert the same to an electrical signal providing to said modulation means information defining said scanning control signal to the full extent required for control of display scanning by said television receiver; and

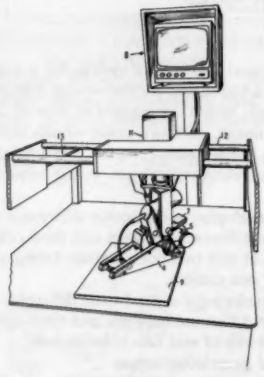
means to connect the output of said modulation means to the antenna input of said television receiver.

4,149,187

PRINTING PLATE INSPECTION APPARATUS

Archibald E. Palmer, Punchbowl; Raymond G. Macquart, Lugarno, and Risto T. T. Karaiste, Tahmoor, all of Australia, assignors to John Fairfax & Sons Limited, New South Wales, Australia

Filed Jul. 5, 1977, Ser. No. 812,952
Claims priority, application Australia, Jul. 6, 1976, PC6546
Int. Cl.[2] H04N *7/18;* G01B *5/28*
U.S. Cl. 358—106 **5 Claims**



1. Printing plate inspection apparatus comprising a length of opaque material having a straight edge which is adapted to be placed adjacent the surface to be inspected, a light source adapted to light the surface on one side of the straight edge, and a viewing device disposed on the side of the straight edge

and adapted to receive source light reflected from the surface under the straight edge.

4,149,188

TELEVISION RECEIVER WITH DISPLAY OF AUDIO SIGNALS

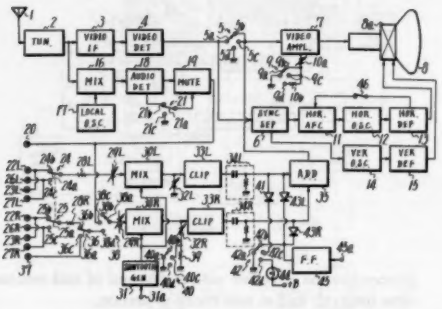
Kunio Nagai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 7, 1977, Ser. No. 849,437

Claims priority, application Japan, Nov. 11, 1976, 51/151550[U]

Int. Cl.² H04N 9/62

U.S. Cl. 358—139 **4 Claims**



1. A television receiver for selectively displaying a television picture and an audio signal waveform on the screen of a cathode ray tube comprising:

a. first input means for receiving a video signal representing the television picture to be displayed;

b. second input means for receiving an audio signal having a waveform to be displayed;

c. means coupled to said second input means for converting said audio signal to a waveform display pulse signal having the phase position corresponding to said audio signal;

d. a video amplifier coupled to the cathode ray tube and having brightness adjusting means;

e. selection means for selectively applying said video signal and said waveform display pulse signal to said video amplifier; and

f. means for changing to lower the background level of the screen of the cathode ray tube during the display of said audio signal waveform.

4,149,189

TELEVISION RECEIVER WITH DISPLAY OF AUDIO SIGNALS

Kunio Nagai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 7, 1977, Ser. No. 849,438

Claims priority, application Japan, Nov. 15, 1976, 51/153003[U]

Int. Cl.² H04N 9/62

U.S. Cl. 358—139 **3 Claims**

1. A television receiver for selectively displaying a television picture and an audio signal waveform on the screen of a cathode ray tube comprising:

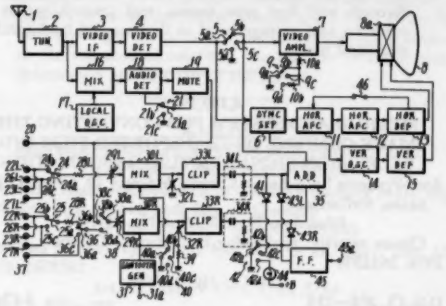
a. first input means for receiving a video signal representing the television picture;

b. second input means for receiving an audio signal having a waveform to be displayed;

c. means coupled to said second input means for converting said audio signal to a waveform display pulse signal having the phase position corresponding to said audio signal;

d. selection means for selectively applying said video signal to a video amplifier coupled to the cathode ray tube during the display of the television picture; and

e. means coupled to said signal converting means for controlling said waveform display pulse signal so as to be



applied to said video amplifier every other field during the display of said audio signal.

4,149,190

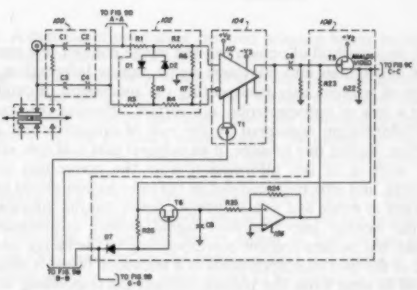
AUTOMATIC GAIN CONTROL FOR VIDEO AMPLIFIER

Louis E. Wessler, Cupertino, and Kenneth F. Koch, Mountain View, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 17, 1977, Ser. No. 842,991

Int. Cl.² H04N 5/52

U.S. Cl. 358—174 **9 Claims**



1. An automatic gain control circuit for controlling the gain of a video amplifier of the type adapted to amplify a composite video signal comprised of a video data component and a synchronization component, said circuit comprising:

first means coupled to the output of said video amplifier for sampling the voltage level of the amplified composite video signal during the backporch portion of said synchronization component;

second means coupled to the output of said video amplifier for sampling the voltage level of the amplified composite video signal during the tip portion of said synchronization component;

third means coupled to said first and second means for comparing the actual potential difference between the sampled backporch and tip portions with a predetermined reference potential and for generating a gain control signal representative of such comparison;

fourth means for coupling said gain control signal to a control input of said video amplifier in order to control the gain thereof to maintain the actual potential difference between said backporch and tip portions proportional to the level of said predetermined reference potential; and

said first means comprises fifth means for generating a first timing control signal that is true for a predetermined period during said backporch portion, first gate means coupled to the output of said video amplifier for passing

said amplified video signal when and only for so long as said first timing control signal is true, sixth means for storing the voltage level of the video signal passed through said first gate means, and seventh means for coupling said voltage level as the sampled backporch to said third means.

4,149,191

METHOD AND SYSTEM FOR CONVERTING THE IMAGE CONTENT OF TRANSPORTED FILM INTO TELEVISION SIGNAL PICTURE INFORMATION

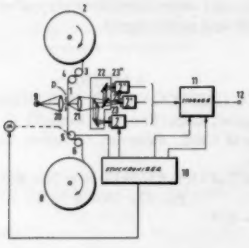
Jean-Francois Longchamp, Chemin de Gresy 19, CH-1012 Lausanne, Switzerland

Filed Jun. 29, 1977, Ser. No. 811,157

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1976, 2632378

Int. Cl.² H04N *3/36*

U.S. Cl. 358—214 **6 Claims**



1. In a method of converting the image content of a succession of originals into television signal picture information, the steps of continuously transporting the succession of originals past a row of optoelectronic converters, effecting read-out of the information registered by the row of optoelectronic converters, during one passage of an original past said row effecting write-in of this information from the converters into a storage, and effecting read-out of the information stored in the storage at a rate and in a sequence converting the information in the storage into television signal picture information in which the picture content corresponding to the image lines of one of the two interlaced fields of a television frame is disinterlaced in time from the picture content corresponding to the image lines of the other of the two interlaced fields of a television frame.

4,149,192

TRANSMISSION OF ENCODED FACSIMILE SIGNALS AT VARIABLE INTERVALS COMMENSURATE WITH RECORDING TIME

Tadasu Takeuchi, Tokyo, Japan, assignor to Matsushita Graphic Communication Systems, Inc., Japan

Filed Jun. 15, 1977, Ser. No. 806,611

Claims priority, application Japan, Jun. 15, 1976, 51-70594

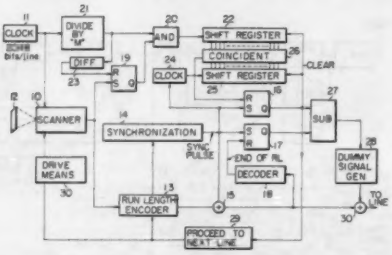
Int. Cl.² H04N *1/38, 1/40*

U.S. Cl. 358—260 **4 Claims**

1. A facsimile communication system including, at a transmitter station, means for successively scanning along each of a plurality of line paths within a document to generate a binary signal waveform comprising binary digits at one of first and second binary levels corresponding to the light levels of said document, means for coding the run-length of each binary digit in said waveform into a corresponding digital code for transmission to a receiver station, and at said receiver station, means for decoding the digital codes to recover the original binary signal waveform, and a plurality of energy transfer elements for transferring electrical energy to the surface of a recording medium, said elements being successively arranged along a line path and equally divided into a plurality of groups, the elements of each group being electrically connected together so as to be energizable for simultaneous transfer of energy within a predetermined period of time, said system comprising, at said transmitter station:

means for equally dividing said binary signal waveform into a plurality of data blocks equal in number to said groups of elements to detect significant data blocks in each of which at least one binary digit at said first binary level occurs;

means responsive to the start of transmission of said digital codes for measuring data blocks by needed for recording said significant data blocks by multiplying said predetermined energizable period by the number of said detected significant data blocks to cause said scanning means to



proceed to the next line path at the end of said measured time interval; and at said receiver station,

means for equally dividing the recovered binary signal waveform into a plurality of data blocks identical to the data blocks at said transmitter station to detect said significant data blocks; and

means for selectively simultaneously energizing a group of said energy transfer elements with the binary digits of said detected significant data block so that groups of said energy transfer elements corresponding to insignificant data blocks in which binary digits are entirely at said second binary level are skipped without loss of time.

4,149,193

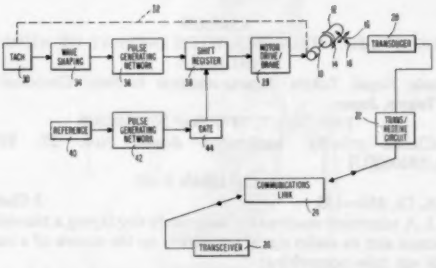
FACSIMILE DRIVE WITH DYNAMIC BRAKE

James G. Michner, 12 Carriage Hill Cir., Casselberry, Fla. 32707

Filed Dec. 23, 1977, Ser. No. 863,891

Int. Cl.² H04N *1/36*

U.S. Cl. 358—267 **10 Claims**



1. A facsimile unit comprising scanning means, information transducer means associated with the scanning means for scanning through various positions, and scanning drive means for driving the scanning means, said scanning drive means comprising a DC motor and a source of a pulsating drive voltage coupled to said DC motor for applying drive pulses to said DC motor during the duty cycle of the pulsating drive voltage, the improvement in said scanning drive further comprising

dynamic brake means for intermittently applying a pulsating

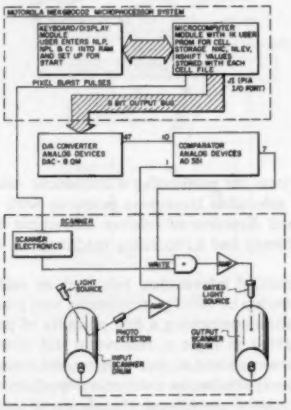
braking current comprising brake pulses between said drive pulses.

4,149,194

VARIABLE ANGLE ELECTRONIC HALFTONE SCREENING

Thomas M. Holladay, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 7, 1977, Ser. No. 813,599
Int. Cl.[2] H04N *1/40, 1/22*
U.S. Cl. 358—283 2 Claims



1. In an electronic halftone screening method of the type wherein sequentially generated pictorial signals are representative of a number of pixel positions in a scan line and a plurality of the scan lines define an original image and wherein synchronously generated halftone screen signals are representative of partial dot values for each pixel position in each scan line and are combined with corresponding pictorial signals to generate reproduction signals which collectively define a halftone reproduction image of the original image, the partial dot values for the screen signals being organized in cells shaped in an angled, rectangular pattern that encompasses pixels in multiple scan lines with the cell pattern being repeated to cover the area of the original image,

the improvement being reducing the electronic storage required for the partial dot values and simplifying the electronic addressing operations for the stored partial dot values comprising

arranging the partial dot values in an order within a number of circulating storage means with the order and number of storage means being determined by the angle of the screen, a first of said circulating storage means containing an arrangement of partial dot values for combination with a first scan line of pictorial signals and second and subsequent circulating storage means, when required by a screen angle, containing an arrangement of partial dot values for corresponding second and subsequent scan lines of pictorial signals,

starting the circulation of the partial dot values within a circulating storage means at the partial dot value for the first pixel in a first scan line synchronously with generation of a pictorial signal representative of the first pixel in a first scan line and continuing the synchronous circulation throughout the scan line,

continuing the like circulation of the partial dot values in a second and subsequent numbers of circulating storage means, if any, for second and subsequent scan lines as required for a particular screen angle,

repeating the circulation of the partial dot values in the first and subsequent circulating storage means for scan lines not assigned a circulating storage means in the same order after

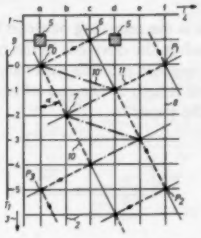
shifting the start of the circulation of partial dot values by a number of partial dot values relative to the order of partial dots existing in the circulating storage means being subject to the repeated circulations, the number of shifts being determined by the angle of the screen.

4,149,195

METHOD AND APPARATUS FOR PRODUCING RASTERED PRINTED FORMS

Uwe Gast, Rammsee, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Dec. 22, 1977, Ser. No. 863,595
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658502
Int. Cl.[2] H04N *1/06, 1/46, 5/84*
U.S. Cl. 358—283 18 Claims



1. A method of producing rastered printing forms, in which an image pattern is opto-electronically scanned to obtain an image signal, and the printing form production is effected by means of an energy beam recording device controlled by the image signal, whereby the raster points are recorded in a raster network having arbitrary raster angles, by means of relative motion between the printing form and the recording device, comprising the steps of scanning a pattern to be reproduced to simultaneously provide image signals for a plurality of adjacent image points of such a pattern, and selecting for the control of the recording device, the image signal of that image point whose local position on the image pattern is congruent with the local position of the raster point to be presently recorded, in the formation of the desired raster angles.

4,149,196

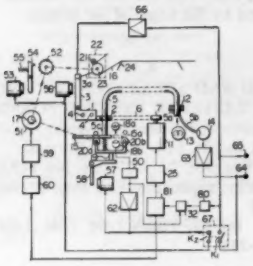
FACSIMILE TRANSMITTER RECEIVER SYSTEM

Tasaku Wada, Tokyo; Ren Aoki, and Mitsugu Fujiwara, both of Hanamaki, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo and Yamura Shinko Seisakusho Co., Ltd., Iwate, both of, Japan

Filed Apr. 27, 1977, Ser. No. 791,325
Claims priority, application Japan, Apr. 28, 1976, 51-49049; Apr. 28, 1976, 51-49050
Int. Cl.[2] H04N *1/10, 1/22, 1/42*
U.S. Cl. 358—286 4 Claims

1. A facsimile transmitter-receiver system comprising: a pulse motor, a carrier operably connected to the pulse motor having a read head and a write head movable linearly in both directions by the pulse motor for scanning a printing paper and an original paper, the speed of movement of the carrier in one direction being the same as that in the other direction, means for mounting an original paper in front of the read head, means for mounting a printing paper in contact with the write head, a control circuit coupled to the pulse motor for applying a predetermined number of pulses to said pulse motor for each scanning cycle and sending a synchronization signal for each scanning cycle in the transmission mode, said synchronization signal being sent in the period that the pulse motor is in a stop condition between the end of the scanning cycle and the begin-

ning of the following scanning cycle, means for changing the operational mode of the device between either a local mode, a transmission mode or a receiving mode, wherein said control circuit is initiated either by receiving a synchronization signal



when the device is in the receiving mode or by the insertion of an original paper when the device is in the transmission mode, and means for moving said printing paper and an original paper by a predetermined length at the end of each scanning cycle for sub-scanning the paper.

4,149,197

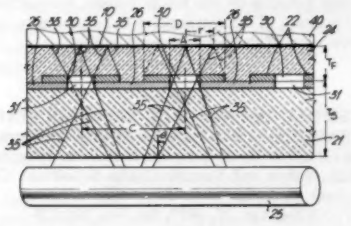
DIRECT IMAGING APPARATUS FOR AN ELECTRONIC DOCUMENT TRANSMITTER UTILIZING A LINEAR ARRAY OF PHOTO-DETECTORS

Steven Kos, and David R. Baraff, both of Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 11, 1977, Ser. No. 840,648

Int. Cl.[2] H04N *1/04*

U.S. Cl. 358—294 **7 Claims**



1. A direct imaging apparatus for an electronic reader of documents, comprising:

a transparent substrate;

a plurality of photo-detectors on a top surface of said substrate, said photo-detectors spaced apart in a linear array;

spacer means on said top surface of said substrate to position a document a predetermined distance from said photo-detectors;

illuminating means below said substrate for illuminating said document through apertures in said linear array;

opaque means between said photo-detectors and said illuminating means to prevent direct impingement of light from said illuminating means on to said photo-detectors;

contact means connected to each photo-detector for abstraction of signals indicative of light reflected from said document impinging on said photo-detectors.

4,149,198

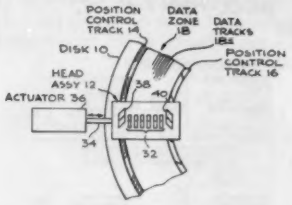
TRANSDUCER POSITIONING SYSTEM

Michael I. Behr, South Pasadena; Norman S. Blessum, Thousand Oaks, and Wilfred D. Iwan, Sierra Madre, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 574,872, May 6, 1975, Pat. No. 4,007,493. This application Sep. 2, 1975, Ser. No. 609,825

Int. Cl.[2] G11B *21/10*

U.S. Cl. 360—77 **20 Claims**



1. In a system for positioning a transducer means among a plurality of selectable transverse positions with respect to a predetermined direction of relative movement between said transducer means and a recording medium, the improvement comprising:

position control information recorded on said medium in said direction of relative movement, said position control information comprising a first plurality of parallel transitions having an angle α_1 relative to said direction of relative movement and at least one second transition having an angle α_2 relative to a direction opposite to said direction of relative movement, the choice of α_1 and α_2 being limited in that neither α_1 nor α_2 can be 0°, and wherein only one of α_1 and α_2 can be 90°, said first plurality of transitions having a spacing S measured in said direction of relative movement which is chosen in conjunction with the spacing P between said selectable positions so as to satisfy the equation:

$$S = P\{(1/\tan \alpha_1) + (1/\tan \alpha_2)\};$$

first and second position control transducers coupled to said transducer means for transverse movement in accordance therewith, said first and second position control transducers being constructed and arranged for sensing said first and second transitions respectively;

digitizing means responsive to the sensing of said first and second transitions for producing respective first and second pulses corresponding thereto; and

detecting means for indicating the transverse position of said transducer means relative to said medium based upon a detection of coincidence between predetermined ones of said first and second pulses produced by said digitizing means.

4,149,199

MAGNETIC DISC STORAGE DEVICE WITH TRACK CENTERING CORRECTION

David M. Chick, Aldershot, and Kenneth H. Sinden, Staines, both of England, assignors to Data Recording Instrument Company Ltd., Staines, England

Filed Jul. 6, 1977, Ser. No. 813,416

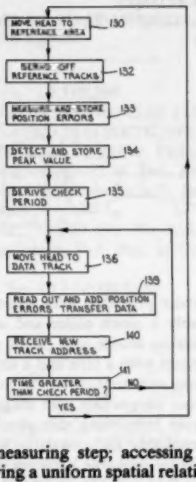
Claims priority, application United Kingdom, Jul. 6, 1976, 27973/76

Int. Cl.[2] G11B *21/10*

U.S. Cl. 360—77 **5 Claims**

1. A method of positioning a transducer assemblage relative to a rotatable magnetic disc having a plurality of data tracks disposed about the axis of rotation of the disc, said transducer assemblage having a movable magnetic read-write head and a position transducer fixed relative thereto, said position transducer being operative to indicate the position of the read-write

head, and the rotatable magnetic disc having recorded thereon at least three non-colinear reference regions lying on a reference track extending around the axis of rotation of the disc, the method comprising the steps of positioning, under control of the position transducer, the read-write head to the expected position of the reference track; measuring the actual position of the reference regions relative to the read-write head; storing



the results of the measuring step; accessing a selected data track on the disc having a uniform spatial relationship with said reference track by moving the head to a position indicated by the position transducer to correspond to the selected data track; and, during rotation of the disc, reading out the stored results and utilising said stored results to modify the position of the read-write head relative to the axis of rotation of the disc to maintain the head in alignment with said selected data track.

4,149,200

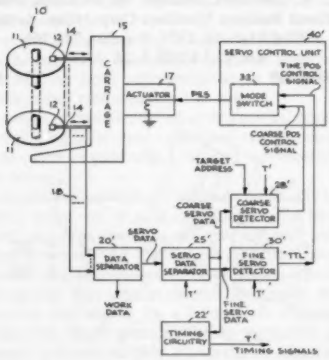
TRANSDUCER POSITIONING SYSTEM

Daniel C. Card, Winnipeg, Canada, assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 31, 1977, Ser. No. 847,012

Int. Cl.² G11B *21/10, 5/012*

U.S. Cl. 360—77 **6 Claims**



1. In an improved magnetic recording system including multi-track magnetic records, at least a portion of each track thereon being recorded in "di-bit" mode, the combination therewith comprising:

a di-bit detection array, said array including filter means adapted to essentially filter the detected di-bit pulse, rejecting "non-standard" waveforms and delay/subtract means adapted to delay portions of this pulse and perform a summation on the original and the delayed pulse forms, with associated polarity-rectification to generate a unipolar output representing each di-bit transition recorded.

4,149,201

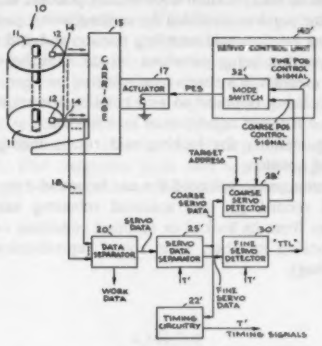
TRANSDUCER CENTERING SYSTEM

Daniel C. Card, Winnipeg, Canada, assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 847,012, Oct. 31, 1977. This application Jan. 3, 1978, Ser. No. 866,413

Int. Cl.² G11B *21/10, 5/012*

U.S. Cl. 360—77 **10 Claims**



1. In an improved magnetic recording system including multi-track magnetic records, at least a portion of each track including prescribed servo data and associated transducer means, the combination therewith comprising:

transducer centering means; and centering control means, said control means being adapted to employ raw servo signals transduced from said servo data and including data separator means for separating work data from servo data and generating output reflecting fine and coarse servo data signals, said control means also including fine servo detect means adapted to receive said fine servo signals and generate "centering-error signals", timing means adapted to receive said output and generate "timing signals" and center-control means adapted to receive said centering and timing signals and responsively control said centering means to reposition respective transducers to maintain them centered over a respective track;

said centering control means being further adapted to combine said signals so as to normalize the amplitude of said centering signals and maintain a prescribed nominal amplitude therefor; and

also including automatic gain control circuit means of a fast-response digital type wherein the amplitude of said centering control signals reflects the "off-center error".

4,149,202

POWER-TRANSMITTING SYSTEM FOR USE IN CASSETTE TAPE RECORDER

Ryuji Terada, Mito, and Yosiaki Tachibana, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 12, 1978, Ser. No. 905,460

Claims priority, application Japan, May 13, 1977, 52-54305

Int. Cl.² G11B *15/02*

U.S. Cl. 360—96.3 **3 Claims**

1. In a power transmitting system for use in a cassette tape recorder of the type, in which there are provided: a pinch roller detached from a capstan in a stopped or rest condition of said recorder, and moved towards said capstan so as to sandwich a tape between said capstan and said roller, so as to drive said tape at a constant speed; a take-up drive system detached from a take-up-side turn table in the stopped condition of said

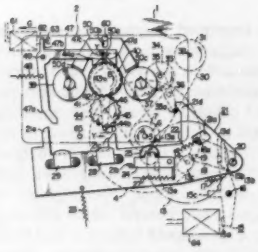
recorder, and contacting said turn table upon sound reproduction (sound recording) so as to drive said turn table; and a brake mechanism contacting turn tables on the take-up and feeding sides so as to apply a braking action to said both turn tables for stopping same, and detached from said both turn tables upon sound reproduction (sound recording), fast feeding and rewinding of a tape so as to release said turn tables from their braked condition; the improvements comprising:

a rotation-transmitting portion provided coaxially with said capstan and rotatable jointly with said capstan;

a rotary member receiving a rotational force from said rotation-transmitting portion having a coupling portion to be coupled to said rotation-transmitting portion, and a non-coupling portion provided by cutting away part of said coupling portion, said coupling portion and said non-coupling portion being provided on the periphery of said rotary member in a continuous relation, said non-coupling portion being opposed to said rotation-transmitting portion in a stopped condition of said recorder;

a locking member for locking said rotary member in its stopped position;

an electromagnetic solenoid for use in sound reproduction (sound recording), said solenoid releasing said rotary member from its locked or stopped condition caused by said locking member, upon sound reproduction (sound recording);



a cam member positioned coaxially with said rotary member and effecting a cam action in association with the rotation of said rotary member;

an auxiliary member so loaded as to contact said cam surface of said cam member all the times, under the action of a first resilient member, and rotating said cam member to a small extent under the action of said first resilient member, when a said rotary member is released from its locked condition caused by said locking member, thereby bringing said rotary member into engagement with said rotation-transmitting portion; and

a driving member for retaining said pinch roller in a rotatable manner, and moving said pinch roller to the sound reproducing (sound recording) position, said driving member being provided with first and second control portions for controlling the movements of said take-up drive system and said brake mechanism, said driving member being pulled by said first resilient member in response to a further displacement of said auxiliary member, said displacement of said auxiliary member being caused by means of said cam member due to the rotation of said rotary member, when said auxiliary member brings said rotary member into a coupling relation to said rotation-transmitting portion, even in case one end of said first resilient member is locked and said drive member is so loaded so as to move towards its stopped position.

4,149,203

TAPE RECORDER

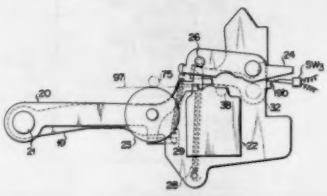
Minoru Kobayashi, Hachioji, and Shigeru Nemoto, Tachikawa, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1977, Ser. No. 780,756

Claims priority, application Japan, Mar. 26, 1976, 51-33211; Apr. 16, 1976, 51-47753[U]

Int. Cl.[2] G11B *21/22, 15/04, 15/48, 15/32*

U.S. Cl. 360—60 **11 Claims**



1. A tape recorder provided with a controlling mechanism to support movably a pinch roller and a magnetic head between a first position where said pinch roller and magnetic head come in contact with a tape and a second position where they leave the tape; said controlling mechanism comprising: a head support lever supporting said magnetic head, a pinch roller support lever supporting said pinch roller, said levers being mounted rockably and coaxially with respect to each other, a control lever rockable between a first position and a second position, a first spring connected between said control lever and the head support lever such that the magnetic head is shifted toward the tape upon rocking of the control lever toward said first position, and a second spring connected between said control lever and the pinch roller support lever such that the pinch roller is shifted toward the tape upon rocking of the control lever toward said first position, at least one of said first and second springs being tensioned so as to be charged with a returning force upon the magnetic head and the pinch roller being shifted toward the tape by said control lever.

4,149,204

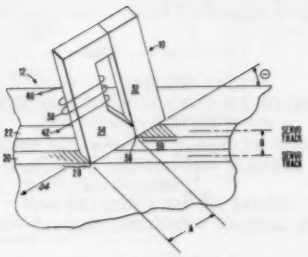
MINOR BIT REDUCTION ON A MAGNETIC HEAD

Peter T. Marino, Boulder; Frank B. Shelledy, Longmont, and Edmond W. Smathers, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 28, 1977, Ser. No. 782,266

Int. Cl.[2] G11B *5/25, 5/27*

U.S. Cl. 360—119 **10 Claims**



1. A magnetic head assembly, for use with a relatively moving magnetic medium having longitudinal servo tracks and data tracks inclined to said servo tracks, said magnetic head moving traversely across the servo track at a predetermined angle to the longitudinal axis of said servo tracks, comprising:

a gap for reproducing signals prerecorded on said medium and for recording signals thereon;

a first pole piece;

a second pole piece cooperating with said first pole piece to form the gap with the outside edge of said second pole piece having a sharp configuration and being the leading edge of the head; said second pole piece having a lengthwise dimension substantially equivalent to the effective spacing between the servo tracks, at the angle of traverse, said measurement being along the direction of head motion; and

coil means seated on one of said pole pieces, for reproducing and recording the signals.

4,149,205

MAGNETIC HEAD AND PROCESS FOR MAKING LAMINATED MAGNETIC HEAD

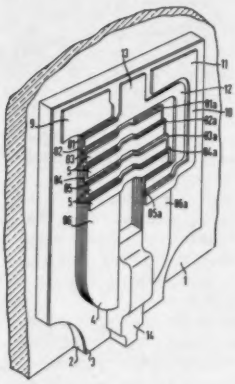
Winfried Berghof, Taufkirchen; Alfred Pichler, Munich, and Rainer Raeth, Taufkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,389

Claims priority, application Fed. Rep. of Germany, May 12, 1977, 2721452

Int. Cl.[2] G11B *5/20*

U.S. Cl. 360—123 **4 Claims**



1. An integrated magnetic head structure comprising

(A) a substrate,

(B) a first magnetic layer deposited on a portion of one face of said substrate,

(C) a first insulating layer deposited over said first magnetic layer, the perimeter of said first magnetic layer and of said first insulating layer corresponding to the perimeter of said integrated magnetic head structure,

(D) a conductor stack deposited over a central region of said first insulating layer, said conductor stack consisting of

(1) a plurality of generally U-shaped electrically conductive layers,

(2) a plurality of generally U-shaped electrically insulating layers, each one of said insulating layers being interposed between an adjacent pair of said conductive layers for insulating such layers from one another,

(3) each U-shaped conductive layer having a pair of laterally spaced legs interconnected terminally across one adjacent end region by a bridge, all bridges of said conductive layer plurality being vertically generally aligned with one another, all vertically adjacent legs on one side of said stack comprising a first leg set, all vertically adjacent legs on the laterally opposed side of said stack comprising a second leg set,

(4) the terminal regions of each succeeding pair of legs being shorter than the terminal regions of each preceding pair of legs with increasing vertical distances from said first insulating layer,

(5) a first electrically conductive pathway forming a first contact spot on said first insulating layer and interconnected with the terminal region of the leg of the conductive layer adjacent said first insulating layer in said first leg set,

(6) a second electrically conductive pathway forming a second contact spot on said first insulating layer and interconnected with the terminal region of the leg of the uppermost conductive layer relative to said first insulating layer, in said second leg set,

(7) a plurality of electrically conductive pathways, each such pathway interconnecting the terminal region of a leg in said first leg set with the terminal region of a leg in said second leg set which second set leg is associated with the conductive layer which is vertically adjacent the conductive layer of the first set leg, the first set leg and its associated conductive layer being vertically farther from said first insulating layer than the second set leg and its associated conductive layer,

(E) a second magnetic layer deposited over said conductor stack in the region of said bridges thereof, an aperture being defined in said first insulating layer adjacent said stack, first magnetic layer said second magnetic layer being interconnected across said aperture means.

4,149,206

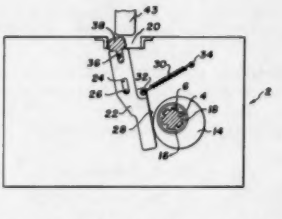
CLEANER FOR A PLAYING HEAD OF A CASSETTE PLAYER

Guy J. Loiselle, 8648 Terrace Dr., Delta, British Columbia, Canada

Continuation-in-part of Ser. No. 685,593, May 12, 1976, abandoned. This application Jun. 30, 1977, Ser. No. 811,813

Int. Cl.[2] G11B *5/41*

U.S. Cl. 360—128 **16 Claims**



1. A cleaner for a playing head of a cassette player having a sprocket drive and having a recess able to receive a cassette tape in a playing position, the cleaner comprising:

a hollow container dimensioned to be retainable within the recess;

a hollow post within the container, positioned to permit the sprocket drive of the player to enter the interior of the container;

a cam positioned on said post and rotatable thereon;

drive means on said cam to engage the sprocket drive of the tape player;

an opening in one side of the container;

a lever pivotally located within the container to be reciprocable by the cam;

means at one end of the lever to receive cleaning means for the playing head of the tape player, the cleaning means being able to project from the opening in the container to contact and clean the playing head when the cleaner is retained within the recess; and

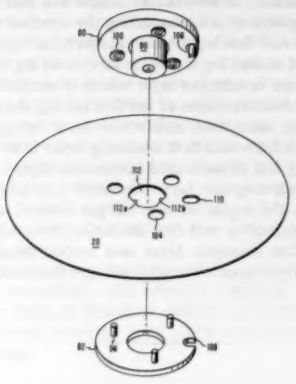
means for continuously engaging the lever and the cam.

4,149,207

CARTRIDGE AND FLEXIBLE MAGNETIC DISK ASSEMBLY

Townsend H. Porter, Jr., and Robert E. Schopp, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1977, Ser. No. 845,003
Int. Cl.[2] G11B *5/016, 5/82, 3/62*
U.S. Cl. 360—133 **20 Claims**



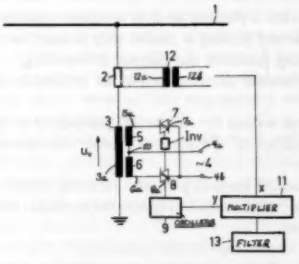
1. A magnetic disk having a first, non-round central opening therethrough and being formed with an abutment for drivingly rotating the disk about said central opening and which is spaced from said central opening, said non-round central opening having a pair of camming edges extending toward each other at a first angle and toward an apex located on a first radial line of the disk, said abutment being located on a second radial line of the disk extending at a second angle with respect to said first radial line.

4,149,208

METHOD OF AND APPARATUS FOR GROUND FAULT PROTECTION OF GENERATORS CONNECTED IN PARALLEL

Michael Fiorentzis, Wettingen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Feb. 6, 1978, Ser. No. 875,692
Claims priority, application Switzerland, Mar. 1, 1977, 2549/77
Int. Cl.[2] H02H *3/16*
U.S. Cl. 361—42 **22 Claims**



1. A method of detecting ground shorts in generators connected in parallel in an electrical network, wherein for detecting essentially completely a ground short at one of the parallely connected generators there are carried out the steps of:

modulating the phase of an alternating signal to produce an alternating injection signal;

delivering the alternating injection signal to the electrical network containing the parallely connected generators; and

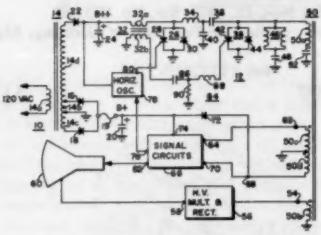
deriving from the electrical network a response signal corresponding to the alternating injection signal and indicative of the ground short at one of the parallely connected generators.

4,149,209

OVER-VOLTAGE AMPLITUDE PREVENTION CIRCUIT FOR HIGH VOLTAGE AND DEFLECTION GENERATING SYSTEM

John Stark, Jr., Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 601,117, Jul. 31, 1975, abandoned. This application Jan. 6, 1977, Ser. No. 757,376
Int. Cl.[2] H02H *3/20*
U.S. Cl. 361—91 **5 Claims**



3. In a high voltage and deflection generating system, a high voltage protection circuit comprising:

power supply means for providing a first direct current potential of a first polarity and a predetermined amplitude;

fusing means coupled to said power supply means for irreversibly disabling said power supply means when excessive current is drawn from said power supply means;

an output transformer;

signal generating means coupled to said output transformer for generating, under normal conditions, alternating current signals in said output transformer, a first polarity potential of which having an amplitude less than said predetermined amplitude;

high voltage means coupled to said signal generating means for developing a high voltage in response to said alternating current signals; and

a unidirectional current conducting device coupled to said output transformer and said power supply means and polarized to provide conduction between said power supply means and said output transformer when said alternating current signals exceed said predetermined amplitude of said first polarity, said output transformer replacing said power supply means in providing an operating potential when said unidirectional current conducting device conducts current, said unidirectionally current conducting device selected to become bidirectionally conductive after conducting substantial amounts of current for drawing sufficient amounts of current from said power supply means to activate said fusing means.

4,149,210

ELECTRICAL APPARATUS INCLUDING INTERLOCKING CIRCUIT FOR SHORT-TIME DELAY AND LONG-TIME DELAY TRIPPING

John T. Wilson, Brighton, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 9, 1977, Ser. No. 831,711
Int. Cl.[2] H02H *7/26*
U.S. Cl. 361—95 **14 Claims**

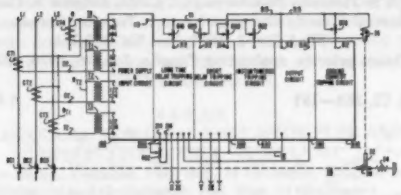
1. An electrical circuit interrupter for responding to electri-

cal current in an electrical transmission system for protecting said transmission system, comprising:

(a) signal conditioner means interconnected with said transmission system for providing a conditioned output signal which is related to the amount of electrical current which flows in said transmission system;

(b) warning signal means interconnected with said signal conditioner means for providing a warning output signal when said conditioned output signal attains a first predetermined value;

(c) time delay triggering means interconnected with said signal conditioner means for providing as an output a circuit interrupter triggering signal at a predetermined delay time after said conditioned output signal attains a second predetermined value;



(d) instantaneous triggering means interconnected with said signal conditioner means for providing as an output a circuit interrupter triggering signal instantaneously with said conditioned output signal attaining said second predetermined value;

(e) disable means with an input terminal and with an output terminal, said output terminal being interconnected with said instantaneous trigger means for disabling said instantaneous trigger means when a predetermined disable means input signal is present on said input terminal; and

(f) circuit interrupter control means interconnected at an input thereof with said time delay triggering means and said instantaneous triggering means for actuating said circuit interrupter to open said transmission line whenever a circuit interrupted triggering signal is received at said latter input.

4,149,211

LINE SURGE PROTECTION DEVICE FOR TELEPHONE SYSTEM

Harold P. DeHoff, Council Grove, Kans., assignor to Monarch Molding, Council Grove, Kans.

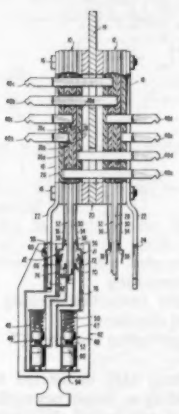
Filed Oct. 17, 1977, Ser. No. 842,893

Int. Cl.[2] H02H 1/04

U.S. Cl. 361—119 **4 Claims**

1. A unitary line surge protector for removable connection to an individual, existing connecting block and jack assembly of a main distribution frame of a telephone exchange system at a telephone office or substation in which connecting block and jack assemblies are mounted in stacked relation on a mounting plate attached to the main distribution frame and in which each connecting block and jack assembly includes four generally parallel connector strips and an outside clamping strip all connected to the mounting plate and separated from each other and from the mounting plate by insulating strips interposed therebetween in a sandwiched configuration, the two interior connector stips and their insulating strip extending outwardly beyond the mounting plate in a first direction to form first and second jack connectors, the two outside connector strips including spring extensions that extend outwardly beyond the mounting plate in said first direction and are each spring biased into contact with the adjacent one of the first and second jack connectors to thereby form, in conjunction with the first and second jack connectors, a pair of normally closed jacks, the outside clamping strip being at ground potential and extending outwardly beyond the mounting plate in said first direction to form a guide extension running generally parallel to the spring extension of the adjacent one of the outside connector strips, the guide extension also being at ground potential and having a shoulder stop intermediate the ends of the guide extension, each of the generally parallel connector strips also including a right angle extensions forming two-wire pairs of connecting lugs with current paths between each of the pairs of connecting lugs passing through an associated one of the pair of normally closed jacks, the pair of normally closed jacks and the guide extension having substantially coplanar edges and having approximately equal widths in the direction of stacking of the block and jack assemblies on the mounting plate, a pair of normally closed jacks and guide extension of a first jack and block assembly having a predetermined fixed spacing in the stacking direction relative to a pair of normally closed jacks and a guide extension of a second jack and block assembly mounted adjacent the first assembly in stacked relation on the mounting plate, the line surge protector comprising:

a generally flat housing of electrically insulative material having a front edge with an edge width greater than the width of one pair of normally closed jacks, the edge width being no greater than the sum of the width of said one pair of normally closed jacks plus said fixed spacing, the housing having a width measured in a direction parallel to the front edge and perpendicular to the direction of measurement of the front edge width of the housing that exceeds



the distance between the normally closed jacks and the guide extension in the common plane thereof, the front edge of the housing having apertures extending into the housing, one aperture being configured to receive the guide extension and another aperture being configured to receive the one pair of normally closed jacks;

an electrically conductive guide engaging member disposed in said one aperture to electrically contact the guide extension and spring bias the guide extension into sliding engagement with at least one interior surface of the aperture;

first and second pairs of electrically conductive jack engaging members each disposed in said another aperture to electrically contact an associated pair of said jacks and spring bias said jacks into an open position; and

a pair of line surge protection devices each disposed in a cavity in the housing, each protection device including first and second line terminals and a ground terminal, each pair of electrically conductive jack engaging members extending through electrically isolated passages in the housing into contact with the respective line terminals of an associated one of the protection devices, the electrically conductive guide extension engaging member extending through an electrically isolated passage in the housing into electrical contact with the ground terminal of each of said protection devices; whereby each of the pair

of jacks of one block and jack assembly is opened with said housing receiving said guide extension and jacks, and a current path is provided between the pairs of connecting lugs through the jack engaging members and the protection devices.

4,149,212

ELECTRICALLY ENCODED, ELECTRICALLY CONTROLLED PUSH-BUTTON COMBINATION LOCK

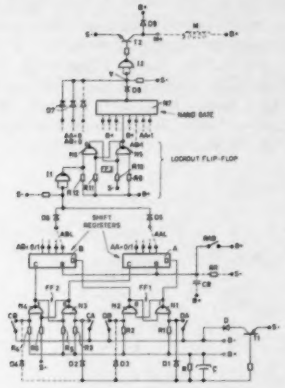
Rolf Willach, Au, Switzerland, assignor to Huwil-Werke GmbH, Möbelschloss- und Beschlagfabriken, Ruppichteroth, Fed. Rep. of Germany

Filed Dec. 27, 1977, Ser. No. 864,743

Claims priority, application Switzerland, Sep. 12, 1977, 011117/77

Int. Cl.[2] E05B *49/00*

U.S. Cl. 361—172 **13 Claims**



1. Electrically encoded, electrically controlled push-button conbination lock comprising

electromagnetically controlled locking means (4,14) normally in locked condition;

a plurality of push-button switches (7, DA, CB, CA, CB, RAB);

an encoding circuit (13) connected to the push-button switches providing an output permitting unlocking of the locking means if, and only if, the sequence of operation of the plurality of push-button switches conforms to a code contained in the encoding circuit

comprising, in accordance with the invention,

a memory (A, B) connected to said push-button switches and storing, in binary form, the sequence of operation of the respective push-button switches in the form of a binary code word;

a comparison or decision stage (N7, D7) connected to said memory (A, B) and having

first input means (AA = 1; AB = 1) connected to the memory at the memory positions of all digits of the code associated with the specific lock of one binary digital value (1);

second input means (AA ; 0; AB = 0) connected to the memory at the memory positions of all digits associated with the specific lock of the code word of the other binary digital value (0);

and third input means connected to the memory at a memory position, the value of which is unaffected by operation of the push-button switches if the push-button switches are operated in accordance with the code associated with said lock;

and means (I2, T2, M) connected to control the locking means (4, 14) in accordance with the decision of the decision and comparison means

(a) if the code entered by operation of the push-button switches into the memory conforms to the code associated with the specific lock, as determined by the connections between said first, second and third input means and the memory, to control the locking means to permit unlocking thereof; or

(b) if the code entered by operation of the push-button switches into the memory does not conform to the code associated with the specific lock, as determined by the connection between said first, second and third input means and the memory, to control the locking means (4, 14) to remain in disabled or de-energized condition and hence inhibit unlocking operation of the lock.

4,149,213

TWO WIRE MULTIPLE SWITCHING SYSTEM

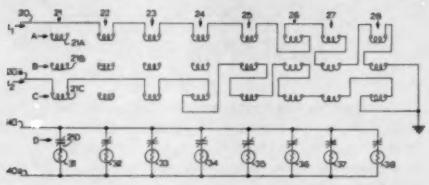
Ralph S. Flemons, Peterborough, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Filed Jun. 2, 1977, Ser. No. 802,354

Claims priority, application Canada, Jun. 16, 1976, 254925

Int. Cl.[2] H01H *47/22*

U.S. Cl. 361—191 **6 Claims**



1. A control system for use in a hostile environment where the use of permanently magnetized material is not desirable, comprising

a plurality of switching means each having a respective winding means and having a normal and an actuated condition and being operable from the normal to the actuated condition solely by the presence of an electromagnetic field from a respective winding means,

at least a pair of control conductors interconnecting said winding means to provide a unique electromagnetic field at each switching means in response to different ratios of currents flowing in said conductors to provide selective actuation of said switching means, and

control means connected to said control conductors to selectively provide desired ratios of currents thereto.

4,149,214

IGNITION DEVICES

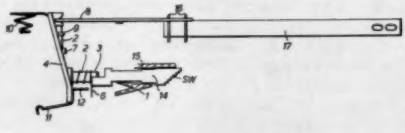
Ronald A. Harrison, Fareham, and Brian E. Hutchings, Gosport, both of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Dec. 1, 1976, Ser. No. 746,612

Claims priority, application United Kingdom, Dec. 2, 1975, 49523/75

Int. Cl.[2] F23Q *3/00*

U.S. Cl. 361—256 **5 Claims**



1. A pistol-like hand-operated portable electric ignition device for the ignition of gas which comprises an insulating housing, supporting means for supporting a battery within said housing, manually-operable switch means interconnecting said supporting means with a circuit means for providing relatively high voltage alternating current pulses in response to the oper-

ation of said manually-operable switch means, said circuit means including a transistor oscillator circuit for providing alternating current pulses, rectifying means for rectifying said alternating current pulses for charging a capacitor, conducting means arranged to conduct to provide for the discharge of said capacitor through the primary of a transformer when said capacitor is charged to a predetermined value, a spark gap across the secondary of said transformer wherein sparking occurs when the charge voltage on the capacitor reaches a predetermined value, said manually-operable switch means comprising a trigger-like actuating button of insulating material which is slidably mounted in said housing and which engages with a free end of a coiled springy relatively stiff wire constituting a moving contact of said switch means in response to the depression of said actuating button, a fixed contact plate having a contact edge disposed obliquely to the direction of movement of said actuating button, and means for positioning said fixed contact plate adjacent said moving contact so that said wire contact slides along said contact edge when said actuating button is manually triggered.

4,149,215

ELECTRICAL TERMINAL UNIT WITH FUSE AND INTERCHANGEABLE NEON LAMP

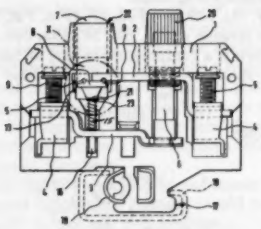
Werner Strich, Detmold, Fed. Rep. of Germany, assignor to C. A. Weidmüller KG, Detmold, Fed. Rep. of Germany

Filed Oct. 17, 1977, Ser. No. 842,826

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1976, 2646611

Int. Cl.[2] H02B *1/04*

U.S. Cl. 361—331 **8 Claims**



1. An electrical terminal unit comprising an insulating casing having first and second connector bars, a fuse having two terminals, each connected to a respective connector bar, first mounting means mounting said fuse in the unit whereby said fuse interconnects said bars and hence said terminals, an indicating lamp having two terminals, and second mounting means removably mounting said indicator lamp in the unit whereby aid lamp is connected between said bars, said second mounting means comprising a holder provided in a first said bar and receiving a cap of said lamp, and a contact resiliently mounted on a second said bar and engaging a contact stud of said lamp.

4,149,216

FUSED UNITIZED COMBINATION STARTER

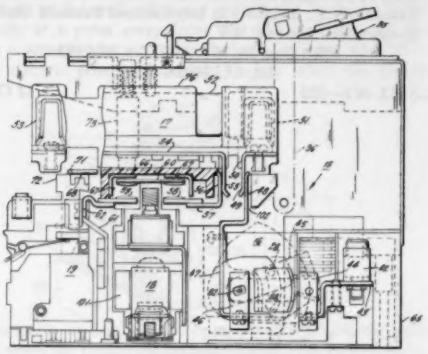
Frank W. Kussy, Randallstown, and John L. Haydu, Towson, both of Md., assignors to Gould Inc., Rolling Meadows, Ill.

Filed May 16, 1977, Ser. No. 797,500

Int. Cl.[2] H02B *1/04*

U.S. Cl. 361—357 **10 Claims**

1. An electrical protective device mountable to a surface positioned to the rear of said device; said device including a molded insulating base at the rear thereof; a multipole electromagnetic contactor on said base having opposed first and second ends; terminals at said first end for connecting said device in an external circuit; a multipole switch on said base having opposed third and fourth ends; additional terminals at said third end for connecting said device in an external circuit; said contactor and said switch being positioned with said second end adjacent said fourth end; a multipole fuse unit removably supported on said base and positioned in front of and



confronting said contactor; said fuse unit being connected in electrical series with said switch and said contactor.

4,149,217

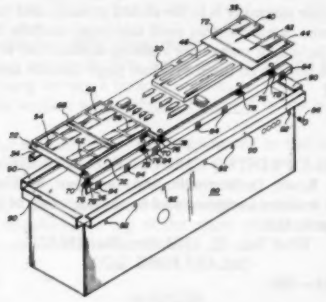
TOUCH CONTROL PANEL FOR INDUCTION HEATING COOK-TOP

Raymond M. Tucker, Cleburne, Tex., assignor to Rangaire Corporation, Cleburne, Tex.

Filed Jul. 26, 1977, Ser. No. 819,169

Int. Cl.[2] H05B *5/08*; H02B *1/02*

U.S. Cl. 361—358 **16 Claims**



1. A touch control panel comprising:

a plate of insulating material having outer and inner planar surfaces separated by a predetermined thickness,

at least one discrete area of conductive material formed on said outer planar surface,

a circuit board having at least one conductive region formed thereon, said circuit board being independent from said plate and removably biased with respect to said plate, and

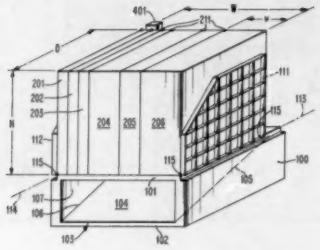
means for biasing said circuit board against said inner planar surface of said plate with said conductive region bearing against said inner planar surface, such that said conductive region is positionable by movement of said circuit board to permit said conductive region to be oriented adjacent said discrete area to form a touch sensitive circuit.

4,149,218

MINIMUM DELAY MODULE ASSEMBLY

Francis P. Carrubba, North Haven, Conn., and Paul E. Stuckert, Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1977, Ser. No. 866,193
Int. Cl.[2] H05K 7/20
U.S. Cl. 361—383 12 Claims



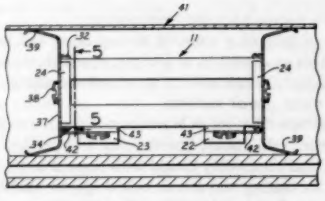
1. An electronic packaging system comprising a minimum electrical delay module assembly including a base support assembly and a hinged module assembly mounted thereon, said base support assembly including a foraminous base member for supporting said hinged module assembly, an air chamber located under said base member for assuring an unrestricted flow of ambient air up through said base member, said hinged module assembly comprising a plurality of vertically disposed page modules of substantially the same height and depth, hinge means connecting and hinging each page module to each adjacent page module, said hinge means being adapted to allow all of said page modules to physically abut each other in a parallel arrangement when said hinged module assembly is closed wherein all of said vertical hinge means connecting said page modules lie substantially in a common plane, flexible electrical conductor means for interconnecting said page modules and connected to each said page module along the edge thereof adjacent and parallel to said hinge plane, the length of said conductors being fixed and determined by the distance between the connection points in each page module when said hinged module assembly is in the closed positon, and individual cooling means carried within each said page module, the cooling means including means for causing ambient air to pass up through the bottom of the individual page module and out the top thereof.

4,149,219

FLEXIBLE PRINTED CIRCUIT BOARD ASSEMBLY

Robert W. Kraft, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 22, 1978, Ser. No. 879,925
Int. Cl.[2] H05K 7/20
U.S. Cl. 361—386 3 Claims



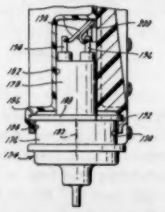
1. A flexible printed circuit board assembly comprising,
a multi-layer flexible printed circuit board,
a plurality of rigid printed circuit boards bonded to said multi-layer flexible printed circuit board, said rigid printed circuit boards being spaced apart from one another and said multi-layer flexible printed circuit board being reverse-bended at the spaces between said rigid printed circuit boards to align said rigid printed circuit boards in stacked parallel positions,
first and second metallic end plates attached to said flexible and said rigid printed circuit boards for maintaining said boards in said stacked parallel positions,
a cylindrical housing surrounding said flexible and rigid printed circuit boards, and
a first metallic heat sink attached to said first end plate and a second metallic heat sink attached to said second end plate, said metallic heat sinks each having a plurality of resilient fingers engaging the inside surface of said cylindrical housing for positioning said printed circuit board assembly within said housing and for transferring heat from said assembly to said housing.

4,149,220

ARRANGEMENT FOR MOUNTING A TRANSDUCER ON A HOUSING

Frederick W. Crall, Farmington, and Lawrence W. Tomczak, Sterling Heights, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 659,297, Feb. 19, 1976, Pat. No. 4,050,093, which is a division of Ser. No. 587,193, Jun. 13, 1975, abandoned, which is a continuation-in-part of Ser. No. 570,540, Apr. 22, 1975, abandoned. This application May 23, 1977, Ser. No. 799,414
Int. Cl.[2] H01H 13/04
U.S. Cl. 361—395 2 Claims



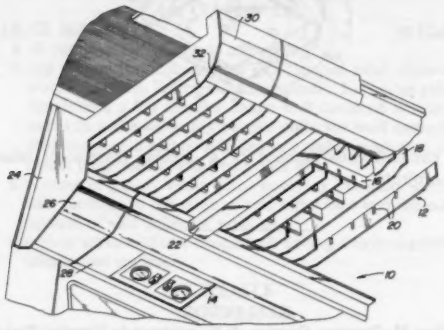
1. In an arrangement for mounting a transducer device on a housing comprising a pair of housing elements detachably secured together and wherein said transducer device comprises a cylindrical body, the improvement for mounting said transducer device between said two housing elements with said body being axially and non-rotatably circumferentially located comprising:
a U-shaped flange on the outside of said body comprising a semi-circular flange segment which is concentric with the axis of said body and straight flange segments continuing from diametrically opposite locations on said semi-circular flange segment, and a mating U-shaped groove in a wall of one of said housing elements within which said flange is disposed, said groove being open to permit said flange to be inserted into mating relationship with said groove during mounting of said transducer device on said housing with said housing elements detached from each other, said other housing element preventing removal of said transducer device from said housing when said transducer device is mounted on said housing and said two housing elements are secured together.

4,149,221

COMBINED BAGGAGE RACK AND LIGHT ASSEMBLY

Walter S. Eggert, Jr., Huntington Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed Jan. 16, 1978, Ser. No. 869,758
Int. Cl.[2] F21S 1/02
U.S. Cl. 362—73 9 Claims



1. In a vehicle having an interior wall and a combined baggage rack and overhead lighting assembly secured to said interior wall, comprising:

a. mounting means secured to said wall,

b. means including at least two spaced support members attached to said mounting means and extending inwardly away from said wall,

c. a grill member having a plurality of longitudinal and transverse bars, said bars having cooperating notch openings therein to permit said bars to be nested together for forming said grill member for holding baggage disposed between said support members, ends of said longitudinal bars forming opposed end edges and ends of said transverse bars forming opposed side edges of said grill member, said end edges of said grill member being supported by said support members,

d. an elongated light fixture housing and means for attaching said elongated light fixture housing to said wall extending longitudinally below said grill member,

e. said light fixture housing being connected to said support members and including a pair of elongated tracks having a centrally disposed opening therebetween,

f. a plurality of light fixture assemblies and means for movably mounting said plurality of light fixture assemblies in said centrally disposed opening to permit said light fixture assemblies to be moved on said pair of tracks to different predetermined positions prior to securing them in place on said tracks,

g. means for securing said light fixture assemblies to said tracks at the predetermined positions, and

h. means for mounting panels of predetermined lengths on said light fixture housing between adjacent pairs of said light fixture assemblies to fill in any openings therebetween.

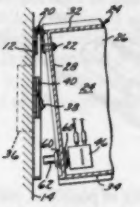
4,149,222

BED LIGHT SAFETY APPARATUS

Harry T. Linde, Fullerton, Calif., assignor to Chemetron Corporation, Chicago, Ill.

Filed Mar. 30, 1977, Ser. No. 783,048
Int. Cl.[2] F21V 33/00, 23/04
U.S. Cl. 362—130 3 Claims

1. In a combination comprising an electric lighting fixture to be mounted to a wall, so as to overhang an electrically elevatable bed, and a switch to be connected in electrical circuits for the fixture and the bed and arranged to enable electric power to elevate the bed under normal conditions but to disable such power upon physical interference between the bed, or an object carried by the bed, and the fixture, an improvement wherein the fixture is to be mounted to the wall be a means permitting the fixture as a whole to be displaced from an attitude close to the wall when any part of the fixture is urged upwardly at a point away from the wall, and wherein the switch is arranged for movement between a closed position to enable electric power to elevate the bed when the fixture



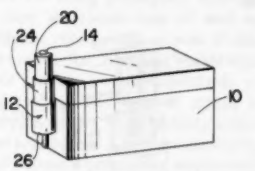
assumes such attitude and an open position to disable such power when the fixture has been displaced from such attitude, said switch being provided with an operating member yieldably biasing the latter toward said closed position, said member being disposed for holding said switch in said closed position against said biasing only when said fixture assumes such attitude.

4,149,223

TACKLE BOX LIGHT

Jack E. Moberly, R.R. 4, Box 536F, Anderson, Ind. 46011

Filed Feb. 22, 1977, Ser. No. 770,610
Int. Cl.[2] A45C 15/06
U.S. Cl. 362—156 3 Claims



1. A tackle box light, comprising:

a housing removably attachable to a side of said tackle box, the housing having a bottom section,

a middle section telescopically mounted in the bottom section,

an upper section telescopically mounted in the middle section,

the upper section forming a chamber,

a battery removably receiveable in the chamber, and

a light attached to a top of the upper chamber and electrically connected to the battery.

4,149,224

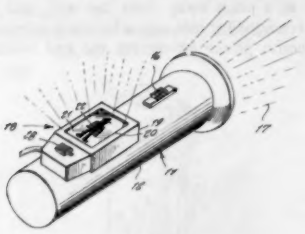
INSTANT SAVIOR

William G. King, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jan. 11, 1977, Ser. No. 758,466
Int. Cl.[2] F21L 1/00
U.S. Cl. 362—157 2 Claims

1. A unit for identifying the size of an intruder in combination with a portable flashlight, including a case containing dry cell batteries, a lamp and a switch in a circuit, said device comprising an identifying unit mounted upon a side of said flashlight having a translucent window which serves as a screen for projection thereon of a plurality of images, means within said unit for selectively projecting each of said images on said screen in further combination with a variable weight

responsive switch externally remote from said case, electrically connected to said unit, said unit being electrically connected to said circuit, wherein the said weight responsive



switch includes a plurality of positions, each corresponding to the projection by said means of a selected image on said screen, wherein each said position corresponds to a predetermined weight acting upon said weight responsive switch.

4,149,225

FRAMES FOR LANTERNS HAVING A MANTLE

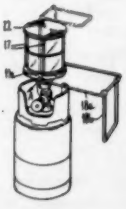
Leslie Barson, Victoria, Australia, assignor to Companion Pty. Limited, Victoria, Australia

Filed Aug. 26, 1977, Ser. No. 828,088

Claims priority, application United Kingdom, Aug. 28, 1976, 35882/76

Int. Cl.[2] F21L *19/00*

U.S. Cl. 362—186 **3 Claims**



1. A frame for a lantern including a base having a burner therein connectible to a fuel supply, a grid and glass mounted on the base, the grid serving to restrain said glass, a handle, and interconnecting means for releasably interconnecting said grid, base and handle to hold said grid, base and handle together in assembled condition.

4,149,226

LIGHT FIXTURE

John Dalton, Yardley, Pa., assignor to Keystone Lighting Corp., Bristol, Pa.

Filed Jul. 22, 1977, Ser. No. 817,904

Int. Cl.[2] F21S *5/00*

U.S. Cl. 362—216 **15 Claims**

1. An electrical fixture for holding circular fluorescent lamps, comprising in combination,

(a) an enclosure within which is disposable the electrical circuitry for connecting at least one circular fluorescent lamp to a source of electrical power, and

(b) lamp-holding resiliently deflectable skirt means depending from said enclosure, said skirt means being a one-piece integral portion of a part of said enclosure and having openings therethrough into which a portion of the outer

circumferential surface of a circular fluorescent tube projects.

4,149,227

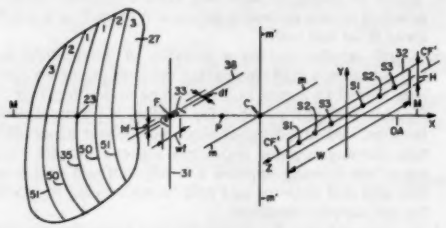
REFLECTOR

William H. Dorman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 20, 1977, Ser. No. 808,170

Int. Cl.[2] F21V *7/00*; A61B *1/06*

U.S. Cl. 362—297 **25 Claims**



1. Means for reflecting illumination comprising:

a reflector, formed from a plurality of surface segments, each of said surface segments having lateral boundaries for reflecting said illumination into a limited zone of illumination:

each surface segment formed from a portion of at least one elipsoidal base surface forming a compound elipsoidal surface,

said base surface having a major axis corresponding to an optical axis for the reflector and a minor axis, said major and minor axes being perpendicular and intersecting at a center point for the base surface, a pair of focci for the base surface lie on said major axis; a first of which being a primary focus, for the reflector, for location of a source of illumination, a second of which being a conjugate focus lying in the vicinity of the illumination zone;

said surface segments being defined as selected portions of said base surface measured from a point on said major axis, said surface segments defined with respect to coordinates corresponding to a displacement of the center point of the base surface to the vicinity of said primary focus and a rotation of said base surface

through a selected arc segment about a line substantially perpendicular to a first plane including said major and minor axes, and passing through said first plane in the vicinity of the primary focus, the lateral boundaries of the segments lying in corresponding planes perpendicular to the first plane and converging towards and parallel with the line about which they are rotated.

4,149,228
COMPACT UNIFORM LIGHT DIFFUSER AND ATTENUATOR

James R. Adamson, Jr., Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

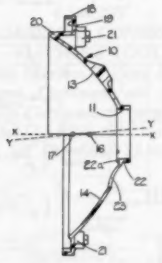
Filed Jul. 22, 1977, Ser. No. 818,263
Int. Cl.[2] F21V 7/00
U.S. Cl. 362—307 10 Claims

1. A compact light diffuser comprising:
a cup shaped toroidal member of C-shaped axial cross-section, made from light conducting plastic, having an axis of revolution, a flat circular image wall centered normal to said axis and a smoothly curved collector wall extending said image wall and terminating in a right circularly cylindrical input face coaxial with said axis;
a coating of glossy white paint covering the inner surface said member to the edge of said input face and the outer surface of said collector wall; and
the outer surface of said image wall having a light scattering translucent surface.

4,149,229
LAMP REFLECTOR WITH DOWNWARDLY-FACING STEP

Geoffrey R. Draper, Lichfield, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 2, 1977, Ser. No. 802,834
Claims priority, application United Kingdom, Jun. 18, 1976, 25310/76; Apr. 29, 1977, 17990/77
Int. Cl.[2] F21V 7/00
U.S. Cl. 362—349 24 Claims



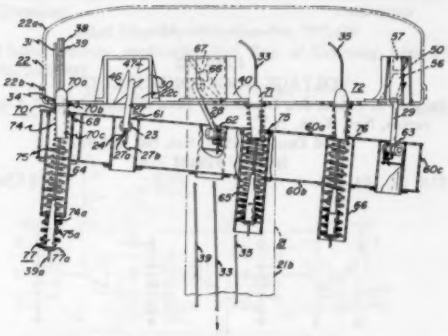
1. A lamp reflector comprising upper and lower portions having respective reflective surfaces of different focal length joined together by a step which defines a cut-off to a beam of light emanating from the reflector in use, the lower reflective surface having a greater focal length than the upper reflective surface, the step facing the lower reflective surface and decreasing in width inwardly from the periphery of the reflector, the upper portion and the reflective surface thereof projecting forwardly away from the rear of the reflector to a greater extent than the lower portion and the reflective surface thereof so as to define a reflective shield.

4,149,230
VISUAL LATCHING CONDITION INDICATING SYSTEM FOR TALL POLE CARRIER ASSEMBLY

John S. Garchinsky, Aldan, Pa., assignor to Gar Design Research, Inc., Media, Pa.

Filed Sep. 22, 1977, Ser. No. 835,509
Int. Cl.[2] F21V 21/14; B42F 13/00
U.S. Cl. 362—403 12 Claims

1. A system for raising and lowering a carrier to and from a predetermined high position toward the top of a pole, comprising
(a) a mast head situated at said predetermined high position and having a plurality of first latching means,
(b) a carrier having a plurality of second latching means which when it is at said high position, engage associated ones of said first latching means for principally suspending said carrier from said mast head,
(c) a plurality of substantially vertical cables mounted to move in said mast head for lowering and raising said carrier and having respective first ends coupled to corresponding selected portions of said carrier,
(d) means coupled to the second ends of said plurality of cables for imparting vertical movement to them for raising and lowering said carrier, and
(e) means carried by said carrier and associated with said first ends of said plurality of cables for providing signals

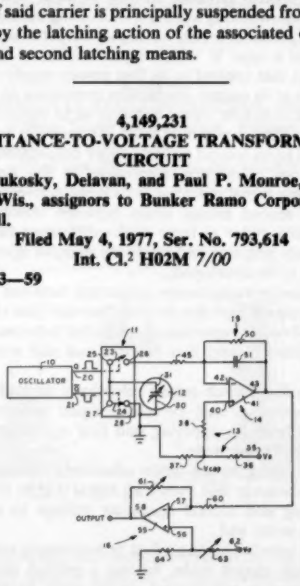


below the lower surface of said carrier which are visible from the ground for indicating said selected portions of said carrier are being principally supported by engagement of their associated ones of said second latching means with the corresponding ones of said first latching means, said means for providing visible signals including a plurality of resilient means respectively coupled to said first ends, each of said resilient means having at least portions which have a high visibility coloration and protrude from said carrier when the associated selected portion of said carrier is principally suspended from said mast head by the latching action of the associated ones of said first and second latching means.

4,149,231
CAPACITANCE-TO-VOLTAGE TRANSFORMATION CIRCUIT

Allen A. Bukosky, Delavan, and Paul P. Monroe, Janesville, both of Wis., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 4, 1977, Ser. No. 793,614
Int. Cl.[2] H02M 7/00
U.S. Cl. 363—59 12 Claims



1. A capacitance-to-voltage transformation circuit for pro-

viding an output voltage variation related to capacitance variations in a variable capacitor element, comprising:

means for applying a reference voltage potential;

circuit means coupled to said applying means for charging said variable capacitor element to said reference potential;

switching means for cyclically connecting said variable capacitor element to said circuit means and to a ground potential; and

impedance means coupled between said circuit means and said switching means for conducting the charging current provided by said circuit means to said variable capacitor during a predetermined portion of each of said switching cycles and for developing an output voltage variation related to the variations in capacitance of said variable capacitor.

4,149,232

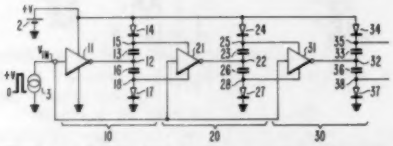
VOLTAGE BOOSTING CIRCUITS

Sargent S. Eaton, Jr., Lewisville, Tex., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 16, 1977, Ser. No. 861,452

Int. Cl.[2] H02M *7/44*

U.S. Cl. 363—60 **12 Claims**



1. A voltage booster circuit comprising:

first and second terminals for connection to a voltage supply supplying said first and second terminals first and secohd operating voltages, respectively, which are respectively relatively positive and relatively negative with respect to each other;

a first inverter having a first power supply connection to said first terminal, having a second power supply connection to said second terminal, having an input connection for receiving switching signals which swing between first and second potential levels, having an output connection, and being of a type in which a potential level substantially equal to that applied to its first power supply connection appears at its output connection responsive to the second level of switching signal potential at its input connection, and in which a potential level substantially equal to that applied to its second power supply connection appears at its output connection responsive to the first level of switching signal potential at its input connection;

first and second circuit nodes between which a voltage essentially twice as large as the difference between said relatively negative and relatively positive operating voltages is to be developed;

a first booster capacitance connected between the output connection of said first inverter and said first circuit node;

a second booster capacitance connected between the output connection of said first inverter and said second circuit node;

a first analog switch means selectively closing essentially only whenever said switching signal potential is at its second level for applying said first operating voltage to said first circuit node;

a second analog switch means selectively closing essentially only whenever said switching signal is at its first level for applying said second operating voltage to said second circuit node; and

a second inverter having a first power supply connection to said first circuit node, having a second power supply connected to said second circuit node, having an input connection for receiving said switching signal potential, being of a type in which a potential level substantially equal to that applied to its first power supply connection appears at its output connection responsive to the second level of switching signal potential at its input connection, and in which a potential level substantially equal to that applied to its second power supply connection appears at its output connection responsive to the first level of switching signal potential at its input connection, whereby a voltage is produced at the output connection of said second inverter that exhibits an amplitude swing essentially three times as large as the difference between said relatively negative and relatively positive operating voltages.

4,149,233

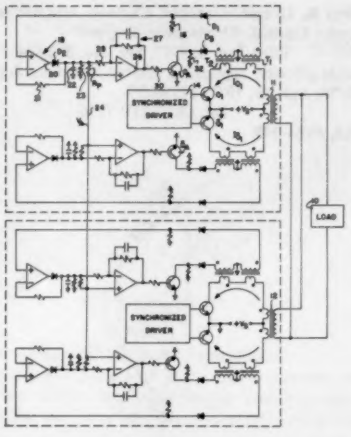
CIRCUIT FOR AUTOMATIC LOAD SHARING IN PARALLEL CONVERTER MODULES

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Napano and Satoshi Nagano, Long Beach, Calif.

Filed Sep. 15, 1977, Ser. No. 833,637

Int. Cl.[2] H02M *3/335;* H02P *13/18*

U.S. Cl. 363—71 **7 Claims**

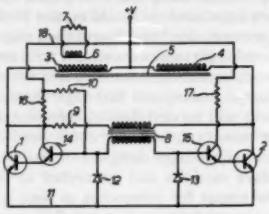


1. A circuit for automatic load sharing among parallel-connected converter modules, each module having push-pull connected power transistors, and each transistor having a separate current-sensing transformer and an impedance-adjusting transformer with their primary windings connected in series with the collector of the transistor, said impedance-adjusting transformer having its primary winding functioning as a current-controlled variable impedance responsive to a current in the secondary winding that is proportional to the difference between the peak collector current of the transistor and the average peak current of all collector currents of power transistors in all modules, said circuit including means connected to the secondary winding of said current-sensing transformer for detecting said peak collector current, means connected to all peak detecting means for producing said average peak current of all peak collector currents, means responsive to the difference between the peak collector current of a particular power transistor and said average peak current for producing an error signal proportional to said difference, and means responsive to said error signal for controlling current through the secondary winding of the impedance-adjusting transformer connected in series with the collector of said particular power transistor, thereby to control the collector currents of all power transistors with reference to the average peak collector current.

4,149,234
INVERTER ARRANGEMENTS

John P. Smith, Chelmsford, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Filed Feb. 14, 1978, Ser. No. 877,715
Int. Cl.[2] H02M 7/537
U.S. Cl. 363—133 7 Claims

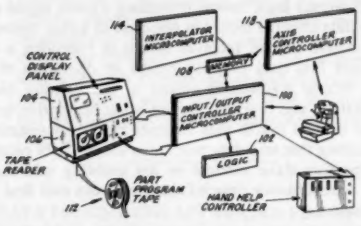


1. An inverter arrangment comprising an output transformer having a tapped primarv winding, one portion of which provides a collector load for a first transistor and the other portion of which provides the collector load with a second transistor and a saturating transformer is arranged to provide oscillatory positive feedback from the collectors to the bases of said first and second transistors and wherein the feedback paths from said saturating transformer to said bases each includes the base emitter path of a respective additional transistor, means being provided for supplying current to the collectors of the additional transistors, whereby to maintain operation during saturation, and wherein said means comprises a resistive path from the collector of each additional transistor to a voltage supply point.

4,149,235
COMPUTER NUMERICAL CONTROL SYSTEM FOR MACHINE TOOL

Stanley G. Froyd, San Marino; William A. Frank, San Gabriel, and Richard Roome, Claremont, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 27, 1976, Ser. No. 754,438
Int. Cl.[2] G06F 15/46
U.S. Cl. 364—101 8 Claims



1. A numerical control system simulating the position of contacts of control relays for controlling a machine tool comprising:

a tape reader for reading numerical data stored on tape, said data describing the shape of a machined part and the control functions required of said machine tool to produce said part,

a interpolator for receiving said data describing the shape of said machined part, and for translating said data into discrete tool and part repositioning instructions in real time,

an axis controller coupled to said interpolator for converting said instructions into speed commands,

servo circuits, one for each machine tool axis, coupled to said axis controller for rotating said axis in accordance with said speed commands, and

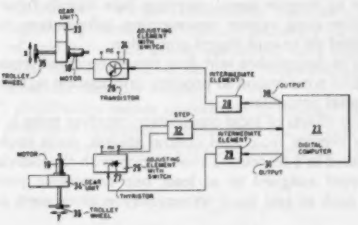
an input/output controller for coupling said tape data describing the shape of said machine part to said interpolator and for controlling the control functions of said machine in accordance with the data received from said tape, and

means for causing said controller to simulate relay contact positions of said relays required to control said machine tool controllable by the operator during the operation of the machine tool.

4,149,236
PROCESS FOR CONTROL OR REGULATION OF ANALOG ELECTRICAL MACHINES

Klaus Halbauer, Frankfurt, Fed. Rep. of Germany, assignor to Messer Grieshiem GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 16, 1977, Ser. No. 797,439
Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2623900
Int. Cl.[2] G05B 15/02; G06F 15/46
U.S. Cl. 364—103 3 Claims

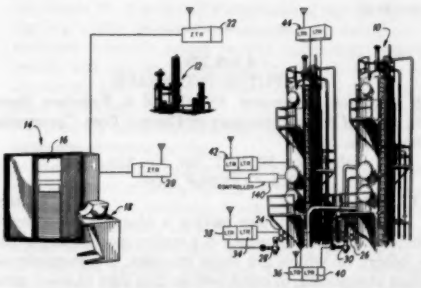


1. In a process for controlling or regulating analog electrical machines with electronic switches as adjusting elements, the improvement being obtaining the on-or-off switching signals for the electronic switches in a digital computer in the form of digital signals, and then conducting these digital signals directly to the electronic switches with the switches being thereby controlled directly by the output signals of the digital computer without any analog intermediate elements therebetween.

4,149,237
INDUSTRIAL PROCESS CONTROL SYSTEM

Manuel P. Freitas, South Easton, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Sep. 16, 1977, Ser. No. 833,978
Int. Cl.[2] G06F 15/46, 3/04
U.S. Cl. 364—107 5 Claims



1. An industrial process control system for use with a complex process wherein portions of the process are spread out over a field area region and wherein the process has a number of variables to be controlled; there being a number of sensing

elements for developing measurement signals reflecting the status of corresponding conditions, and actuators with operating elements associated therewith; said control system comprising:

(1) a central station having a digital computer for carrying out data processing steps and for producing command signals for predetermined process elements including address signals identifying any paticular element and instruction signals indicating specified actions to be taken with respect to an identified element;

(2) a plurality of zone transmitter/receiver units coupled to said central station to receive command signals from said digital computer; each of said transmitter/receiver units being physically located in proximity to a respective distinctive zone of said field area containing a corresponding set of said process elements; each of said zone transmitter/receiver units including:

(a) means for developing a zone output signal capable of transmission to the limits of the region of the respective zone;

(b) means for modulating said output signal with data signals corresponding to said common signals;

(c) means to receive signal carrying data signals from the respective zone region representing information to be forwarded on to said digital computer;

(d) means to demodulate said data signals received from the respective zone region to produce information signals for said digital computer;

(3) a plurality of sets of local transmitter/receiver units in said field area remote from said central station, each such set being located in a respective zone region with the individual units thereof assigned to at least one respective process element; each of said local transmitter/receiver units comprising:

(a) means to receive the zone signal developed and transmitted by the zone transmitter/receiver unit assigned thereto;

(b) means to demodulate the command data signals carried by the received zone signal;

(c) function means for carrying out the actions represented by the instruction signals incorporated in said command data signals;

(d) means for transmitting a local output signal to be received by the zone transmitter/receiver unit for the respective zone;

(e) means to modulate said local output signal with local data signals reflecting information to be conveyed to said digital computer;

(f) means responsive to the address signal part of said command data signals to activate said function means when the address signals identify the respective local units as the recipient; said function means further comprising means for developing transmit control signals to activate said transmitting means to transmit a data-modulated local output signal to the assigned ZTR when required by the instruction signals received from the zone transmitter/-receiver.

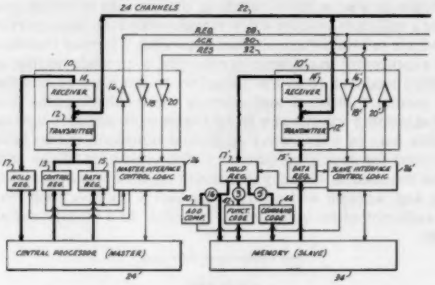
4,149,238

COMPUTER INTERFACE

James A. James, Rosemount, and Derald A. Pedersen, Burnsville, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Aug. 30, 1977, Ser. No. 829,176
Int. Cl.[2] G06F *3/04*
U.S. Cl. 364—200 **8 Claims**

1. In a computer system having a plurality of computer modules, at least one of which is a master module and at least some others of which are slave modules, a communication interface comprising, in combination: first data channel means having a plurality of parallel data channels for carrying binary information; first transmitter means associated with said master module for transmitting binary information, selected from the group consisting of control words and data words, from said master module onto said first data channel means; a plurality of second transmitter means associated with respective ones of said slave modules for transmitting binary data information onto said first data channel means; first receiver means associated with said master module for receiving binary data information from said first data channel means; a plurality of second receiver means associated with respective ones of said slave modules for receiving binary information from first said data channel means; second, third and fourth data channel means; first logic means associated with said master module and connected to said second, third and fourth data channel means; a plurality of second logic means associated with respective ones of said slave modules and connected to said second, third and fourth data channel means; said first logic means providing a pulse signal onto said second data channel means when said first transmitter means transmits a control word onto said first data channel means; address compare means associated with each of said slave modules and connected to the respective second receiver means for comparing at least a portion of a control word received by said respective second receiver



means with a predetermined address; said second logic means being responsive to a compare signal from said address compare means and said pulse signal on said second data channel means for providing a pulse signal onto said third data channel means; said first logic means being responsive to said pulse signal on said third data channel to selectively either operate said first transmitter means to provide a data word onto said first data channel means or operate said first receiver means to read binary data information from said first data channel means; said second logic means providing a pulse signal onto said fourth data channel means in response to either operation of the respective second receiver means in receiving a data word on said first data channel means or operation of the respective second transmitter means in transmitting binary data information; said first logic means being responsive to said pulse signal on said fourth data channel means for selectively either indicating that said data word was successfully received by the respective slave module or for enabling said master module to accept binary data information from said first data channel means.

4,149,239

SECONDARY STORAGE FACILITY FOR CONNECTING TO A DIGITAL DATA PROCESSING SYSTEM BY SEPARATE CONTROL INFORMATION AND DATA TRANSFER PATHS

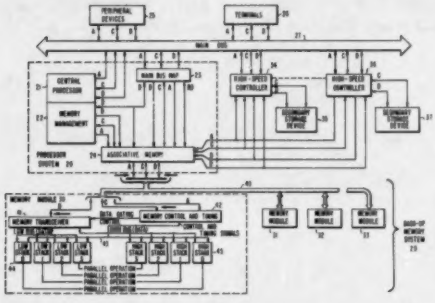
Stephen R. Jenkins, Acton; Thomas A. Northrup, Westford, and Robert E. Stewart, Stow, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 658,113, Feb. 13, 1976, Pat. No. 4,055,851.
This application Oct. 25, 1977, Ser. No. 845,220
Int. Cl.[2] G06F *3/06, 13/00, 13/06*
U.S. Cl. 364—200 **12 Claims**

1. A secondary storage facility connected to a digital data processing system wherein the digital data processing system includes central processor means, associative memory means connected to the central processor means and including a

plurality of addressable storage locations for storing information and a memory control means for controlling the transfer of information between the associative memory storage locations and the central processor means in response to signals from the central processor means, input and output means for providing external communications with the data processing systems, first bus means for interconnecting the central processor means and the input and output means, and random access memory means connected to the associative memory means and including a plurality of addressable storage locations for storing information therein, the memory control means further controlling the transfer of information between the associative memory means and random access memory means, said secondary storage facility comprising:

A. direct access secondary storage means for storing information that is transferred sequentially thereto or therefrom, and



B. controller means connected to said secondary storage means for controlling the transfers of information to and from said secondary storage means, said controller means including:

i. first connection means connected to the first bus for transferring with the first bus address and control signals thereby to transfer information with the data processing system over the first bus through said first bus connection means, and

ii. second connection means connected to the memory control means in the associative memory means for transferring to the memory control means address and control signals, said controller means thereby being responsive to information transferred over the first bus means for affecting a transfer of information between said secondary storage means and the random access memory means under the control of the memory control means in response to the address and control signals from said controller.

4,149,240

DATA PROCESSING APPARATUS FOR HIGHLY PARALLEL EXECUTION OF DATA STRUCTURE OPERATIONS

David P. Misunas, Brighton, and Jack B. Dennis, Belmont, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 605,932, Aug. 19, 1975, which is a continuation-in-part of Ser. No. 456,488, Mar. 29, 1974, Pat. No. 3,962,706. This application Jun. 14, 1976, Ser. No. 695,721

Int. Cl.[2] **G06F** *3/00, 13/00;* **G06K** *17/00*

U.S. Cl. 364—200 **20 Claims**

1. A digital data processor comprising:

(a) structure memory means for holding at least a record of structure nodes, said structure memory means containing a plurality of structure cells, each of said structure cells either holding one structure node of said record of structure nodes or being empty, and each structure cell having a unique index;

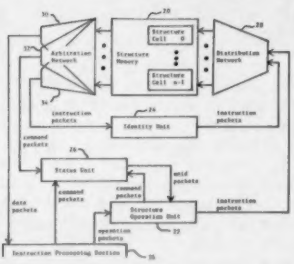
(b) structure operation means for managing signals in the execution of data structure operations, said data structure operations comprising read and write operations on the structure nodes comprising said record of structure nodes held in said structure memory means;

(c) status means for managing signals in maintaining a reference count associated with each structure node of said record of structure nodes held in said structure memory means, said reference count designating the number of references to its associated structure node existing in said digital data processor;

(d) identity means for managing signals in the execution of identity operations;

(e) instruction processing means for managing signals in the execution of instructions of a program and transmitting signals representing first information packets to said structure operation means and signals representing second information packets to said status means, said signals representing first information packets comprising signals representing read and write operations to be executed on said structure nodes of said record of structure nodes contained in said structure memory means and said signals representing second information packets consisting of signals representing operations necessary for maintenance of said reference count associated with each structure node of said record of structure nodes maintained in said structure memory means;

(f) distribution means operatively connected between said structure operation means and said structure memory means for concurrently transmitting signals representing a



plurality of third information packets from said structure operation means and said identity means to said structure memory means, each of said signals representing third information packets consisting of signals representing an operation to be performed on a structure node of said record of structure nodes, together with all required operands;

(g) first arbitration means operatively connected between said structure memory means and said instruction processing means for concurrently transmitting signals representing a plurality of fourth information packets from said structure memory means to said instruction processing means, said signals representing fourth information packets consisting of signals representing data values resulting from execution of operations specified in said signals representing third information packets received by said structure memory means;

(h) second arbitration means operatively connected between said structure memory means and said status means for concurrently transmitting signals representing a plurality of fifth information packets from said structure memory means to said status means, said signals representing fifth information packets consisting of signals representing operations necessary for maintenance of said reference count associated with each structure node of said record of structure nodes maintained in said structure memory means; and

(i) third arbitration means operatively connected between said structure memory means and said identity means for

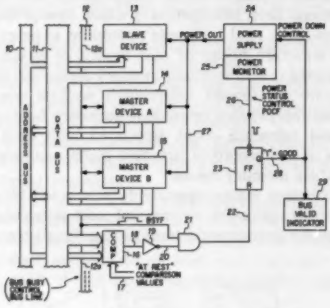
concurrently transmitting signals representing a plurality of sixth information packets from said structure memory means to said identity means, said signals representing sixth information packets consisting of signals representing operations to be performed on said structure nodes of said record of structure nodes contained in said structure memory means, together with all required operands.

4,149,241

COMMUNICATIONS BUS MONITOR

Robert A. Patterson, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 13, 1978, Ser. No. 886,007
Int. Cl.[2] G06F *11/00*
U.S. Cl. 364—200 **2 Claims**



1. In a data processing system employing a plurality of devices each having an interface with common parallel address, data and control buses and wherein one line of said control bus comprises a control signal having a predetermined binary level signal thereon when said address and data buses are in a rest state; monitoring means comprising a comparator means receiving said data and address bus lines as respective first inputs thereto and, as a second input thereto a set of comparison values for respective ones of said bus lines corresponding to the normal state thereof under said rest conditions, said comparitor means providing an output logic level of a first binary level when the logic levels of all respective ones of said bus lines and comparison values agree and a second binary level when the logic levels of at least one pair of respective ones of said bus lines and comparison values disagree, binary latch means having a set and reset input, means initially setting said latch means for a first predetermined binary level, and logic means resetting said latch means to a second binary level upon said comparitor means outputting said second binary level and said one line of said control bus exhibiting said rest state defined binary level, and the output of said latch means comprising the output of said monitoring means.

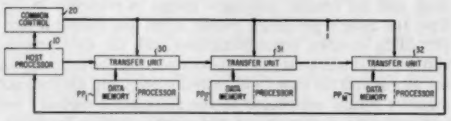
4,149,242

DATA INTERFACE APPARATUS FOR MULTIPLE SEQUENTIAL PROCESSORS

Frank C. Pirz, Piscataway, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 6, 1977, Ser. No. 794,464
Int. Cl.[2] G06F *3/00*
U.S. Cl. 364—200 **21 Claims**

1. Apparatus comprising
a plurality of data memories,
a source of address control signals,
means for mapping said address control signals into first translated address control signals,
means for mapping said address control signals into second translated address control signals, and
means for transferring data from a location selected in response to said first translated address control signals in a first data memory to a location selected in response to said



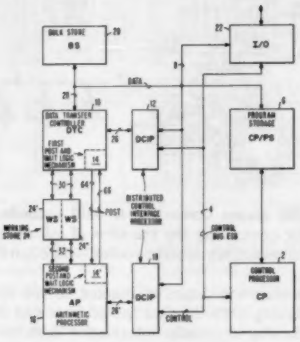
second translated address control signals in a second data memory.

4,149,243

DISTRIBUTED CONTROL ARCHITECTURE WITH POST AND WAIT LOGIC

Donald E. Wallis, Marblehead, Mass., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 20, 1977, Ser. No. 843,902
Int. Cl.[2] G06F *9/18, 15/16*
U.S. Cl. 364—200 **9 Claims**



1. A distributed control architecture for a multiprocessor system, comprising:
a control processor operating on system programming level instructions, for executing system supervisory and test management functions, having a control bus over which it outputs execute instruction words containing a pointer address;
a program storage for storing threaded link lists of intermediate level instruction words, the head of each list being pointed to by the pointer address of a respective one of said execute instruction words;
a first subunit processor for executing a first type subunit function, having a data input and output port and a control input port, and including a first post and wait logic means for posting an output signal indicating the completion of a first type function;
a first distributed control interface processor having a control input connected to said control bus for receiving said execute instruction word, a control output connected to said control input port of said first subunit processor, and a data input connected to said program storage for accessing said intermediate level instruction words from a link list pointed to by said pointer address in said execute instruction word, and including a plurality of stored control programs to execute a first type subunit function, each of which is accessed by a respective one of said intermediate level instruction words, each control program including a sequence of control words which are sequentially output to said control input port of said first subunit processor;
a second subunit processor for executing a second type subunit function, having a data input and output port and

a control input port, and including a second post and wait logic means for posting an output signal to said post and wait logic means in said first subunit processor indicating the completion of a second type function;

said first post and wait logic means posting its output signal to said second post and wait logic means in said second subunit processor, for coordinating the execution of mutually dependent first and second type subunit functions; and

a second distributed control interface processor having a control input connected to said control bus for receiving said execute instruction word, a control output connected to said control input port of said second subunit processor, and a data input connected to said program storage for accessing said intermediate level instruction words from a link list pointed to by said pointer address in said execute instruction word, and including a plurality of stored control programs to execute second type subunit functions, each of which is accessed by a respective one of said intermediate level instruction words, each control program including a sequence of control words which are sequentially output over said control output to said input port of said second subunit processor;

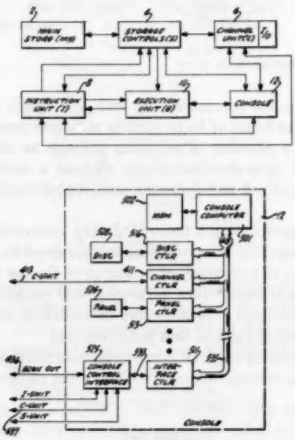
whereby said control processor can initiate tasks to be performed by said first and second subunit processors and then be free to execute system supervisory and task management functions while the first and second type subunit functions are being performed under control of the distributed control interface processors.

4,149,244

DATA PROCESSING SYSTEM INCLUDING A PROGRAM-EXECUTING SECONDARY SYSTEM CONTROLLING A PROGRAM-EXECUTING PRIMARY SYSTEM

David L. Anderson, and Richard L. Bishop, both of Sunnyvale, Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Jun. 7, 1976, Ser. No. 693,552
Int. Cl.[2] G06F *15/16, 9/00, 11/06*
U.S. Cl. 364—200 **13 Claims**



1. A data processing system comprising,

a primary system formed of a plurality of primary circuits and including a general-purpose programmable computer having primary storage apparatus, primary instruction handling apparatus, and primary instruction execution apparatus wherein the primary system processes information by executing a primary program of instructions, said primary program of instructions processed in said primary instruction handling apparatus to cause data manipulations in said execution apparatus and to cause fetching and storing of information from and to said primary storage apparatus in connection with the processing of information by the primary system and wherein said instruction handling apparatus includes selected ones of said primary circuits for altering the execution of said primary program in said primary system, said primary system including primary interface control means having primary interface inputs and having connection means for providing circuit inputs to said selected ones of said primary circuits in response to said interface inputs and independently of said primary program, said primary system including channel apparatus connected between said primary storage apparatus and a plurality of channel controllers where the channel controllers are connected to input/output devices,

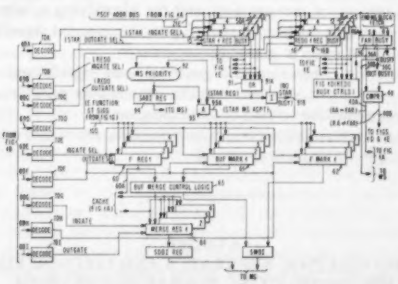
a secondary system including a programmable secondary computer, said secondary computer operable to execute a secondary program of instructions, said secondary system including secondary interface control means connected to said secondary computer and controllable by said secondary program, said secondary interface control means having secondary outputs connected to said primary interface inputs for selecting said selected ones of said primary circuits and for controlling said circuit inputs to alter the execution of said primary program in said primary system in response to said secondary program whereby said primary system is controlled by said secondary system, said secondary system including one of said channel controllers connected as an input/output device to said secondary computer whereby said secondary computer is connected to said primary system as an input/output device.

4,149,245

HIGH SPEED STORE REQUEST PROCESSING CONTROL

Patrick M. Gannon, and Kian-Bon K. Sy, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 9, 1977, Ser. No. 805,065
Int. Cl.[2] G06F *13/06, 9/18*
U.S. Cl. 364—200 **36 Claims**



1. A storage control means in a processor for handling multiple and overlappable requests for accessing a random access main storage during the occurrence of sequence disrupting events, the storage control means receiving fetch and store requests from an instruction processing means and providing an output sequence of the fetch and store requests to main storage having the same sequence as the requests were received from the instruction processing means, the storage control means comprising

plural store request register sets for receiving the store requests from the instruction processing means, each set including a store address register and a redo register, the STAR being provided for receiving a store request, and the redo register being provided for receiving a delayed store request,

delay means for transmitting to a selected redo register means for transmittinng to a selected redo register storage

requests which were delayed in processing in the storage control means,

means responsive to the delay means for activating the use of the redo registers to receive the delayed store requests.

counter means for selecting a register set for receiving a store request provided by the instruction processing means, the counter means selecting a redo register in one of the sets for receiving a store request provided by the delay means within the storage control means, and

means responsive to the delay means for activating the use of the redo registers to receive the delayed store requests.

4,149,246

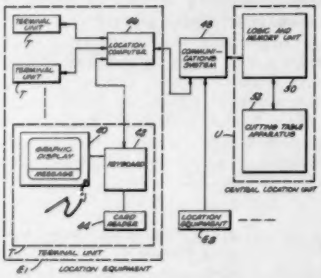
SYSTEM FOR SPECIFYING CUSTOM GARMENTS

Robert N. Goldman, P.O. Box 1186, Kailua, Hi. 96734

Filed Jun. 12, 1978, Ser. No. 914,301

Int. Cl.[2] G06F *3/14, 3/02, 3/04*

U.S. Cl. 364—200 **12 Claims**



1. A system for detailed specification of a garment of clothing, comprising:

memory means for data definitive of specific garments;

input means for providing personal data signals on a proposed wearer of the garment and for identifying a selected garment to said memory means to provide garment signals for said selected specific garment;

means for combining said personal data signals and said signals for said select specific garment to provide data representative of said combination; and

means for manifesting said data representative of said combination for manual approval.

4,149,247

TOMOGRAPHIC APPARATUS AND METHOD FOR RECONSTRUCTING PLANAR SLICES FROM NON-ABSORBED AND NON-SCATTERED RADIATION

John M. Pavkovich, Palo Alto, and Craig S. Nunan, Los Altos Hills, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 23, 1975, Ser. No. 643,894

Int. Cl.[2] G06F *15/34;* G01T *1/166;* G01N *23/00*

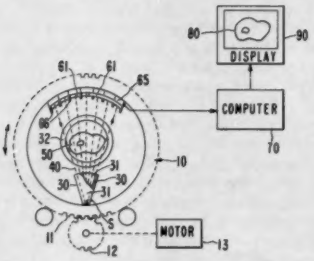
U.S. Cl. 364—414 **44 Claims**

34. Apparatus for constructing a representation of the internal configuration of an object comprising:

means for passing a fan beam of radiation through the object at an object position from a plurality of angles relative to the object;

means for detecting said radiation after having passed through said object position; and

means coupled to said detector means to perform a convolution reconstruction of said detected radiation without reordering said output into outputs representative of the outputs from a substantially new set of rays, said reconstruction means being adapted to provide output signals



representative of the internal configuration of the object through which said beam is passed.

4,149,248

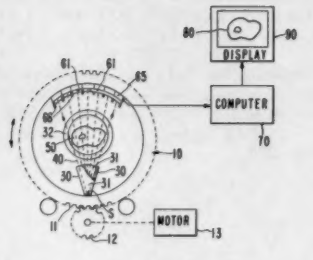
APPARATUS AND METHOD FOR RECONSTRUCTING DATA

John M. Pavkovich, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 23, 1975, Ser. No. 643,896

Int. Cl.[2] G06F *15/34;* G01T *1/166;* G01N *23/00*

U.S. Cl. 364—414 **15 Claims**



1. A device for reconstructing into intelligible form data created by a fan beam of X- or gamma radiation transmitted or emitted from a plurality of positions through an object to be inspected and onto detector means whereat a multiplicity of signals are received and detected; said reconstructing device comprising:

means for performing a non-reordering convolution operation on manipulations of the signals received by the detector means at a plurality of positions of the fan beam relative to said object thus arranging said manipulations in convolved form representative of radiation absorbed by said object at each of said positions; and

means for converting said convolved manipulations to form a two-dimensional reconstruction of the object.

4,149,249

APPARATUS AND METHOD FOR RECONSTRUCTING DATA

John M. Pavkovich, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 643,896, Dec. 23, 1975. This application Jan. 19, 1977, Ser. No. 760,492

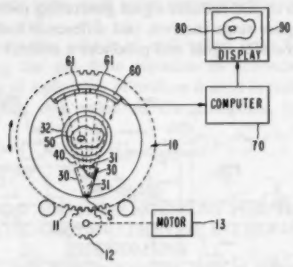
Int. Cl.[2] G06F *15/42;* G01N *23/00*

U.S. Cl. 364—414 **12 Claims**

10. A system for reconstructing into intelligible form data generated by fan beam radiation transmitted from a plurality of positions through an object to be inspected and onto detector

means whereat a multiplicity of signals are received and detected; said system comprising:

means to perform a non-reordering convolution operation on manipulations of the signals received by said detector means at each position of the fan beam relative to said object to arrange said manipulations in convolved form representative of radiation transmitted through said object



at each of said positions, and means for back projecting said convolved manipulations to form a two-dimensional reconstruction of the object;

said means being coupled to said detector means and including a general purpose computer, a special purpose computer, and control logic for interfacing between said computers and controlling the respective functioning thereof.

4,149,250

METHOD AND APPARATUS FOR PRODUCING A CROSS SECTIONAL IMAGE OF A BODY

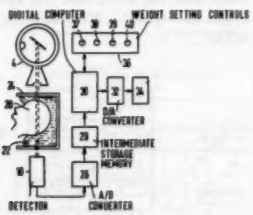
Wieland Jass, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 18, 1976, Ser. No. 715,507

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1975, 2537333

Int. Cl.[2] G01T *1/16*; G06F *15/42*

U.S. Cl. 364—414 **5 Claims**



3. In apparatus for producting a cross sectional image of the body from a distribution of measured total absorption values of ionized rays which penetrate the body in the cross sectional plane and of which at least some rays intersect elements of the image, said apparatus including:

(a) means for generating ionized rays;

(b) means for detecting said ionized rays after passing through a body to be measured providing an analog output;

(c) means for causing said generating and detecting means to be scanned across the sectional plane to be measured;

(d) means to convert the analog detected values into digital values;

(e) means to store the measured digital values;

(f) computing means for

1. storing a convolution kernel;

2. correcting the measured values to take into account the radiation in use;

3. convolving the measurement series with the stored convolution kernel; and

4. re-projecting and additively superimposing the convolved measurement series; and

(g) means for displaying the data so obtained, the improvement comprising:

(h) means for storing a plurality of separate convolution kernels, and weighting parameters; and

(i) means for setting and supplying to said digital computer, for storage in said means for storing, a weighting parameter by which each of said kernels is to be multiplied, said computing means adapted to form the convolution kernel to be used with said measurement series by additively superimposing said plurality of stored convolution kernels multiplied by their associated weighting parameters.

4,149,251

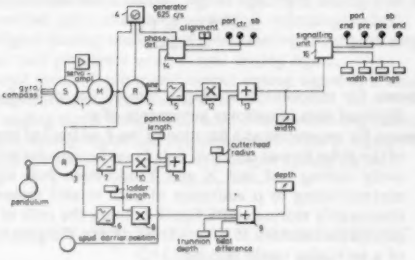
DREDGE PROFILE COMPUTOR FOR A CUTTER SUCTION DREDGE

Cornelis J. Noordermeer, Zwijndrecht, and Johannes Maas, Rotterdam, both of Netherlands, assignors to Observator B.V., Hoogvliet, Netherlands

Filed Mar. 15, 1977, Ser. No. 777,733

Int. Cl.[2] G06G *7/66*; E02F *3/18*

U.S. Cl. 364—424 **6 Claims**



1. A dredge profile computer for a cutter suction dredge consisting of a pontoon, a pivotally mounted ladder on said pontoon and provided with a head, and two spuds, one of which may be movable in the axial direction of the pontoon, said computer comprises a pontoon course data pick-up means, ladder angle transmitting means, a spud position transmitting means and means to introduce corrections relative to the draught of the pontoon in the computer, a plurality of data converting means, multiplier means and adder means to calculate from the swing angle and elevation angle of the ladder sine and cosine functions and in combination with transmitted or preset values for the ladder length, the pontoon length, the spud position and draught corrections the coordinates for the depth and the width of the cutterhead; and furthermore means to indicate the depth and width of the cutterhead, and in combination with said indicator means warning means for warning a dredge operator when approaching and/or exceeding predetermined width limits of the cutterhead; and an adjustment and control unit for presetting the end of sweep of the cutterhead at port side and star board; for pre-warning of the end of cut at port side and starboard, and for presetting draught and course adjustments.

4,149,252

DIGITAL ρ-θ TO XY SCAN CONVERTER FOR USE WITH LIMITED ACCESS OR RANDOM ACCESS REITERATION MEMORY

Monroe A. Miller, Jr., N. Lauderdale, Fla., assignor to The Beadix Corporation, Southfield, Mich.

Filed May 20, 1977, Ser. No. 799,064

Int. Cl.[2] H04N *5/02*

U.S. Cl. 364—456 **5 Claims**

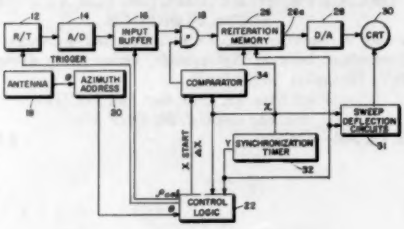
1. A scan converting display system for displaying digitized data available in a polar format defined by $\rho\theta$ addresses and

comprised of a plurality of lines radiating from a common focus, each said line being defined by a predetermined θ address onto a rectangular raster defined by XY addresses wherein the raster is comprised of a plurality of substantially parallel raster lines, each said raster line having a Y address comprising:

means for generating a repeating sequence of X and Y addresses;

means for generating said raster in response to said repeating sequence of X and Y addresses;

a reiteration memory means responsive to said repeating sequence of X and Y addresses for reading data stored in said reiteration memory means onto said means for generating said raster synchronously with said raster whereby said data is displayed on said raster;



means for temporarily storing a line of the polar format digitized data in uniform increments of ρ;

means for generating as a function of the θ address of the line of the polar format digitized data in said means for temporarily storing and said X and Y addresses ρcal signals corresponding to ρ addresses of data in said means for temporarily storing and a signal defining the cells of said reiteration memory to be up-dated during the generation of a particular raster line; and,

means for comparing said X address with the signal defining the cells of said reiteration memory to be up-dated for generating an up-date signal, said means for temporarily storing being responsive to the ρcal signals and said up-date signal to up-date said reiteration memory with data at corresponding ρ addresses in said means for temporarily storing.

4,149,253

SOIL COMPACTING APPARATUS

Alois Paar, Cologne, and Fritz Konig, Wuppertal-Elberfeld, both of Fed. Rep. of Germany, assignors to Losenhausen Maschinenbau AG, Dusseldorf-Grafenberg, Fed. Rep. of Germany

Division of Ser. No. 390,512, Aug. 22, 1973, abandoned, which is a division of Ser. No. 199,275, Nov. 16, 1971, abandoned. This application Nov. 10, 1976, Ser. No. 740,260

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1970, 2057279

Int. Cl.[2] G05B *11/06;* E01C *19/28*

U.S. Cl. 364—505 **11 Claims**

1. A soil compacting apparatus movable along a path and having a compacting element, control means by which at least one of the operational parameters determining the compacting action by said soil compacting apparatus may be varied and measuring means responsive to a selected physical parameter of the soil, the improvement comprising:

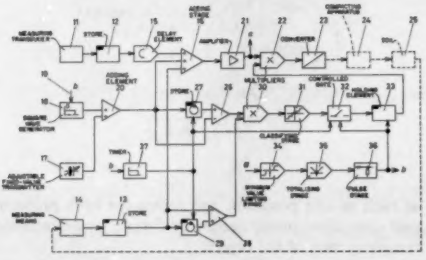
said measuing means trailing said compacting element and moved by the soil compacting apparatus along said path after the soil on the path has been acted upon by the compacting element and producing a measured value signal related to the degree of compaction of the soil in said path;

said control means including an adjustable fixed-value transmitter for producing a command signal;

adding means connected to receive said command signal and said measured value signal to produce a difference output signal therefrom;

transfer signal generating means to generate a transfer signal relating a change in said difference output signal to the corresponding change in said at least one operational parameter;

a multiplier stage having two inputs, means connecting a first of its inputs to said adding means and the second of its inputs to said transfer signal generating means so that said multiplier stage receives said difference output signal and said transfer signal and produces a control signal;



a converter connected to receive said control signal and generating a driving signal for adjusting said at least one operational parameter of said soil compacting apparatus in accordance with said control signal,

whereby said at least one operational parameter may be varied in response to said measured value signal to produce a relatively uniform compaction of said oil in said path as said soil compacting apparatus moves along said path.

4,149,254

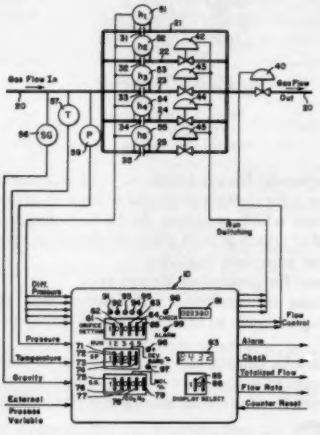
METHOD AND APPARATUS FOR FLOW METERING

Anthony J. Molusis, Plantsville, Conn., assignor to American Chain & Cable Co., Inc., Waterbury, Conn.

Filed Jun. 25, 1975, Ser. No. 590,064

Int. Cl.[2] G01F *1/88;* G06F *15/32*

U.S. Cl. 364—510 **9 Claims**



1. Apparatus for measuring the flow of gas through a pipe comprising:

means for monitoring at least the pressure of said gas and the differential pressure of said gas across an orifice of said pipe;

digital electronic means for calculating a gas flow equation

to determine the flow of gas through said pipe, said equation including terms for the flow of said gas, the differential pressure and at least one constant term that varies with the particular orifice used in said pipe,

means for applying to said digitial calculating means signals representative of at least the pressure of said gas and the differential pressure;

means for storing a plurality of values used in determining said constant term, each value corresponding to a different orifice; and

means for selecting which of said values is to be used in calculating the gas flow equation in accordance with which one of a plurality of orifices is used in said pipe and for applying said value to the electronic calculating means.

4,149,255
METHOD AND ARRANGEMENT FOR THE AUTOMATIC OBSERVATION OF INTERFACIAL PHENOMENA

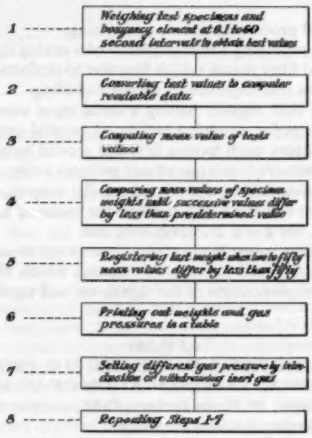
Winfried Kern, and Wilhelm Valentin, both of Erftstadt, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 4, 1977, Ser. No. 793,762

Claims priority, application Fed. Rep. of Germany, May 7, 1976, 2620137

Int. Cl.[2] G01N *25/12*; G01F *11/00*

U.S. Cl. 364—524 **2 Claims**


1
Weighing test specimens and buoyancy element at 0.1 to 60 second intervals to obtain test values
2
Converting test values to computer readable data
3
Computing mean value of tests values
4
Comparing mean values of specimen weights until successive values differ by less than predetermined value
5
Registering last weight when two fifty mean values differ by less than fifty
6
Printing out weights and gas pressures in a table
7
Setting different gas pressure by introduction of withdrawing inert gas
8
Repeating Steps 1-7

1. A method for automatic detecting of isotherms in sensitive electronically compensated vacuum-micro-balance comprising the steps of:

determining the weight of the specimen after time intervals of 0.1 to 60 seconds;

determining the gas pressure in the vacuum-micro-balance at said same time intervals;

feeding the test values of the weight of the specimen and gas pressure by means of a converter into a computer;

forming the mean value of individual test values of the specimen weights and gas pressure in the computer;

comparing the individual mean values of the specimen weights in the computer until successive values differ from one another by less than a predetermined value;

communicating and noting the mean value of the last weight of the specimen as soon as 2 to 50 mean values of the specimen weights differ from one another by less than 50; and registering the specimen weight and gas pressure in the vacuum-micro-balance by printing them out in a table.

4,149,256
ANALOG SIGNAL PROCESSING SYSTEM

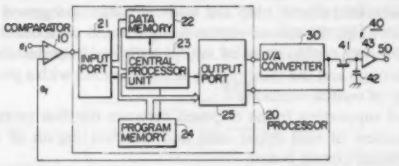
Akira Sumi, and Koju Kataoka, both of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Aug. 31, 1977, Ser. No. 829,505

Claims priority, application Japan, Sep. 7, 1976, 51/107074

Int. Cl.[2] G06J *1/00*

U.S. Cl. 364—602 **9 Claims**



1. An analog signal processing system comprising:

a comparator receiving an input analog signal as one input thereof;

a processor receiving the output of said comparator and having a digital output and a control signal output, said processor performing a first analog/digital conversion operation and a second digital operation during first and second parts of each of successive operating cycles;

a digital/analog converter for converting the digital output of said processor to an output analog signal,

circuit means feeding said output analog signal as a second input to said comparator; and

an analog signal sample and hold circuit receiving said output analog signal and responsive to a control signal from said processor to sample said output analog signal.

4,149,257
ALARM WATCH EQUIPPED WITH ELECTRONIC CALCULATOR

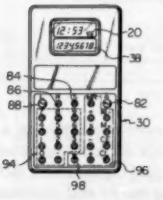
Tadahiko Nakagiri, Higashimurayama; Matao Nezu, Hino; Toshiaki Oguchi, Kodaira; Toshikazu Hatuse, Tanashi, and Minoru Natori, Nishitama, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed May 31, 1977, Ser. No. 801,939

Claims priority, application Japan, Jun. 15, 1976, 51-69364; Jun. 21, 1976, 51-73008; Jun. 21, 1976, 51-73009; Jun. 21, 1976, 51-73010; Jun. 21, 1976, 51-73011; Jun. 21, 1976, 51-73017; Jun. 21, 1976, 51-73018

Int. Cl.[2] G04C *23/00*; G06F *7/38*

U.S. Cl. 364—705 **4 Claims**



1. In an electronic calculator watch powered by a plurality of batteries and having a timekeeping integrated circuit chip adapted to provide a first display information signal representative of time information, a calculator integrated circuit chip adapted to provide a second display information signal representative of calculation result being performed in response to numeric signals and function signals applied by a keyboard, and an alarm time detection circuit incorporated in the timekeeping circuit, the improvement comprising:

an upper case including a first recessed portion formed with an opening, a second recessed portion to accommodate said plurality of batteries and a third portion serving as

said keyboard, with the first, second and third portions being arranged in order in a longitudinal direction of said upper case;

a lower case secured to said upper case;

a printed circuit board interposed between said upper and lower cases and including a first region, a second region and a third region in vertical alignment with said first, second and third portions of said upper case, respectively, with the first region carrying thereon said timekeeping integrated circuit chip and said calculator integrated circuit chip, the second region being formed with bores for allowing replacement of said plurality of batteries therethrough and the third region being provided with a plurality of switch contacts;

a cell supporting frame disposed between the first recessed portion of said upper case and the first region of said printed circuit board;

a liquid crystal display cell supported by said cell supporting frame such that a display surface of said display cell is visible through the opening of said upper case;

elastic electrically conductive members disposed between the first region of said printed circuit board and said display cell to provide an electrical connection therebetween; and

a plurality of keys provided in the third portion of said upper case and adapted to selectively close said plurality of switch contacts to produce said numeric and function signals.

4,149,258

DIGITAL FILTER SYSTEM HAVING FILTERS SYNCHRONIZED BY THE SAME CLOCK SIGNAL

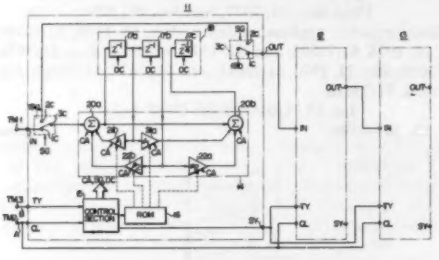
Haruki Yahata; Shunsuke Honda, both of Yokohama, and Tadamichi Kawasaki, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 19, 1977, Ser. No. 862,183

Claims priority, application Japan, Dec. 20, 1976, 51-151934

Int. Cl.[2] G06F *15/34*

U.S. Cl. 364—724 **8 Claims**



1. A digital filter system comprising a plurality of digital filters having respective counters operated by the same clock signal, at least one of said digital filters including an arithmetic control section having one of said counters to count said clock signal and be cleared with a clear signal and a circuit to produce a control signal according to the content of said one counter, a coefficient memory to produce predetermined coefficients according to an output of said arithmetic control section, an arithmetic section to carry out predetermined arithmetic operations with said coefficients under the control of the control signal received from said arithmetic control section, and a circuit to produce a synchronizing signal at the time of end of the operation in said arithmetic section, said synchronizing signal being supplied to clear terminals of the other counters of all the other digital filters to effect synchronization of all said digital filters.

4,149,259

TRANSVERSAL FILTER FOR CONVOLUTED IMAGE RECONSTRUCTION

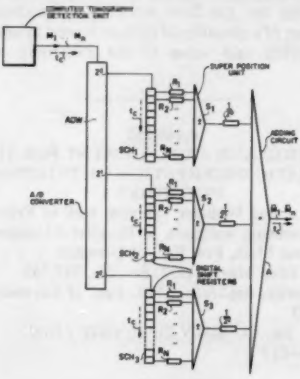
Gunter Kowalski, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 685,499, May 12, 1976, abandoned. This application May 12, 1978, Ser. No. 905,378

Claims priority, application Fed. Rep. of Germany, May 16, 1975, 2521796

Int. Cl.[2] G06F *15/34*; H03K *7/00*; G01T *1/161*

U.S. Cl. 364—724 **5 Claims**



1. A signal processing device comprising:

means for supplying a time-sequence of n analog signals; and

transversal filter means which function to perform a convolution on said sequence of signals including:

an analog shift register having a serial input connected to said means for supplying and 2n−1 parallel outputs;

2n−1 resistors, each having first and second terminals, the first terminal of each one of said resistors being connected to a corresponding one of said parallel outputs, the value of a k th resistor being equal to the value of a 2n−k th resistor, for k=1, 2, . . . (2n−1), and

superposition means having inputs connected to said second terminals of said plurality of resistors which function to form a superposition of the signals on said inputs.

4,149,260

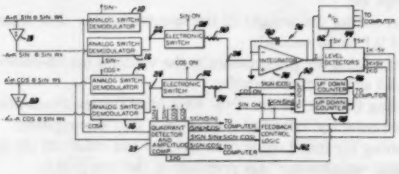
ANALOG TO DIGITAL CONVERTER FOR PROVIDING THE DIGITAL REPRESENTATION OF AN ANGLE

Edward J. Loper, Jr., Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 14, 1977, Ser. No. 833,065

Int. Cl.[2] G06G *7/22*; H03K *13/02*

U.S. Cl. 364—817 **9 Claims**



1. Apparatus for determining the ratio of first and second sinusoidal analog signals having amplitudes which vary as a function of a variable comprising:

signal conditioning means responsive to said signals for developing first and second conditioned signals which are of opposite polarity regardless of said variable,

means for continuously integrating the smaller of said condi-

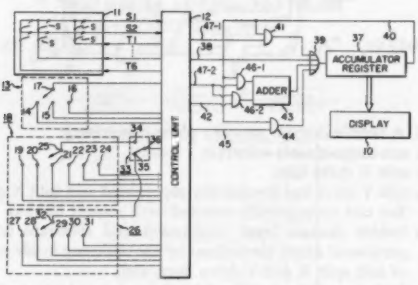
tioned signals and sample data integrating the larger of said conditioned signals to maintain the output of the integratng means between predefined upper and lower limits,

means for computing said variable as a function of the ratio of the number of complete half cycles of said first and second conditioned signals applied to said integrating means during a fixed time interval.

4,149,261
COMPUTER HAVING CIRCUITRY FOR ROUNDING-OFF INSIGNIFICANT DIGITS

Isao Harigaya, Yokohama, and Akihiro Yamataka, Funabashi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1977, Ser. No. 777,828
Claims priority, application Japan, Mar. 19, 1976, 51-30488; Mar. 23, 1976, 51-31862; Apr. 26, 1976, 51-47511
Int. Cl.[2] G06F *15/02, 7/48*
U.S. Cl. 364—745 **6 Claims**



1. A computer including apparatus for rounding off a number comprising:

a memory for storing numerical data of a plurality of digits;

means for indicating a certain digit position higher than a decimal point of the stored data wherein all digits not lower than the indicated position are to be treated as significant digits;

round-off means respnsive to said indicating means for rounding off a digit immediately lower than the indicated digit position of the data, said round-off means including: means responsive to said indicating means for producing a control signal for controlling the data corresponding to all digit positions lower than the significant digits; and

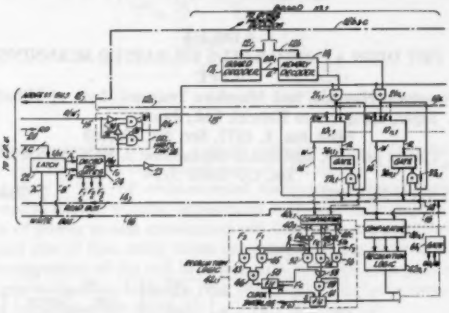
means including logical AND circuitry responsive to the control signal for converting all digits lower than the significant digits of the numerical data stored in said memory into zeros to thereby provide a rounded number having zeros in all positions below the selected digit.

4,149,262
ASSOCIATIVE MEMORY DEVICE WITH VARIABLE RECOGNITION CRITERIA

Sydney M. Lamb, North Haven, and Randall C. Smith, Cheshire, both of Conn., assignors to Semionics Associates, Berkeley, Calif.

Filed Apr. 19, 1977, Ser. No. 788,796
Int. Cl.[2] G11C *15/00*; G06F *7/02*
U.S. Cl. 364—900 **5 Claims**

1. In combination in an associative memory, a plurality of memory modules each including plural information storage addresses, plural comparator means each connected to a different one of said memory modules for receiving information read out therefrom, data bus means connected to each of said memory modules and each of said comparator means, means connected to said data bus for supplying information thereto, memory accessing means including common address bus means connected to said memory modules, each of said comparator means including means for comparing the information supplied thereto from one of said plural addresses of said memory module connected thereto with information present on said data bus means and for developing an output signal representing the results of said comparison, and means for storing said output result signals of said comparator means, each of said comparator comparing means including means for providing output result signals identifying whether the information supplied thereto from said memory module associated therewith is equal to, greater than, or less than the information supplied thereto on said data bus means, wherein said memory modules comprise random access memory means, and further

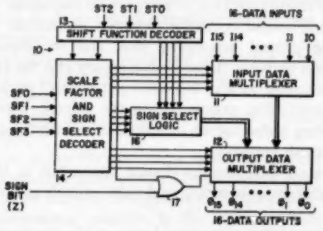


comprising plural recognition logic means, each connected to a corresponding comparator means, and further comprising a comparison gate means having an input connected to the outputs of said plural recognition logic means and an output connected to said data bus means, and further comprising mode decode and register means connected to said bus means, for signalling one of a read or write mode, greater than or less than mode, or equality mode, and wherein said recognition logic means includes plural coincidence gates each having two inputs connected to a different pair of corresponding output result signals from said comparator comparing means and mode signals from said mode decoder and register means.

4,149,263
PROGRAMMABLE MULTI-BIT SHIFTER

Jerry E. Prioste, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 20, 1977, Ser. No. 808,223
Int. Cl.[2] G06F *7/00*
U.S. Cl. 364—900 **10 Claims**



6. A digital data shifter capable of shifting left, shifting right, rotating left or rotating right digital data, comprising: means for receiving digital data in parallel from and upon command shifting the digital data a predetermined number of positions, the means for receiving having a plurality of outputs; first means for decoding function commands for the shifter and having at least three inputs and a plurality of outputs; second means for decoding scale factor shift commands and having a

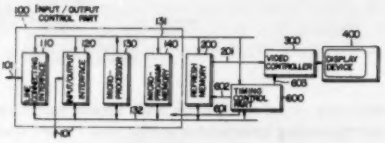
plurality of outputs, some of the plurality of outputs of the first means for decoding being coupled to the second means for decoding; and output means for providing output data and being coupled to the plurality of outputs of the means for receiving, the output means being capable of controllably shifting digital data, some of the plurality of outputs of the second means for decoding being coupled to the output means to provide shifting commands to the output means, some of the plurality of outputs of the second means for decoding being coupled to the means for receiving to provide shifting commands to the means for receiving.

4,149,264

CRT DISPLAY APPARATUS OF RASTER SCANNING TYPE

Nagaharu Hamada, and Masahiro Iwamura, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 1, 1977, Ser. No. 802,463
Claims priority, application Japan, Jun. 2, 1976, 51-63500
Int. Cl.[2] G06F *3/14*
U.S. Cl. 364—900 **2 Claims**



1. A raster scan type display apparatus for displaying information from a central processing unit and a key board comprising:

an input/output control part which comprises:

a common address bus,

a common data bus,

a line connecting interface connected between the common address bus and the common data bus and connected to the central processing unit,

an input/output connecting interface connected between the common address bus and the common data bus and connected to the key board,

a program memory connected between the common address bus and the common data bus,

a microprocessor connected between the common address bus and the common data bus,

a refresh memory connected between the common address bus and the common data bus of said input/output control part for storing data for an image to be displayed, whereby the input/output operation between the refresh memory and the central processing unit, and the input/output operation between the refresh memory and the key board are controlled by said input/output control part;

a video controller connected to the refresh memory for generating video signals in accordance with the data from said refresh memory;

a raster scan type display device connected to the video controller for converting said video signals into an image; and

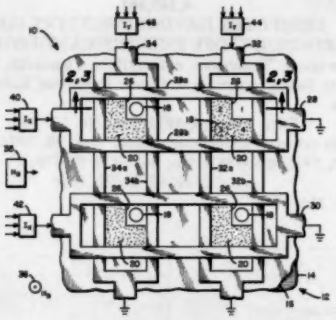
a timing controller connected between the common address bus and the common data bus of said input/output control part, and connected to the refresh memory and the video controller for generating a read out timing signal to said refresh memory and a display timing signal including character display timing, raster display timing and line display timing to said video controller; whereby the generated timings of the read out and display timing signals are determined by the microprocessor of said input/output control part.

4,149,265

METHOD OF IMPROVING THE OPERATION OF A SINGLE WALL DOMAIN MEMORY SYSTEM

John M. Gorres, Cottage Grove; Marlin M. Hanson, Cologne, and Roger E. Lund, Woodbury, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 11, 1977, Ser. No. 786,317
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—2 **3 Claims**



3. A bubble domain memory plane comprising:

a non-magnetizable substrate;

a split X drive line;

a split Y drive line insulatively superposed said split X drive line and orthogonally oriented with respect thereto;

a bubble domain layer superposed said substrate whose peripheral edges are defined by the opposing inside edges of said split X and Y drive lines; and,

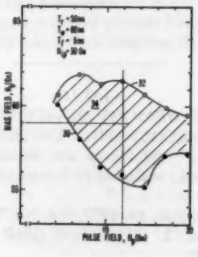
a thickness gradient, defined by the peripheral edges of said layer, generating a field H_p, which field H_p is oriented normal to the plane of said layer, for forming along said thickness gradient a magnetostatic barrier to a bubble domain that is within said bubble domain layer.

4,149,266

DISCRIMINATION OF BUBBLE STATE BY BUBBLE COLLAPSE

Susumu Konishi, Miyouki, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,105
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—7 **6 Claims**



1. A method of determining the wall state of a soft bubble domain in a layer of bubble domain supporting material comprising the steps of:

exchange coupling a planar magnetic layer to said bubble domain supporting layer;

applying a in-plane field to said bubble domain supporting layer when Bloch lines are present in the bubble domains; and

setting the bias field and the pulse field to form a range of pulse widths suitable for the discrimination of soft bubble domains having different wall states, and

applying a pulse for a time sufficient to give a width that falls within said range whereby soft bubbles of a first wall state will collapse and soft bubbles of a second wall state will not collapse.

4,149,267

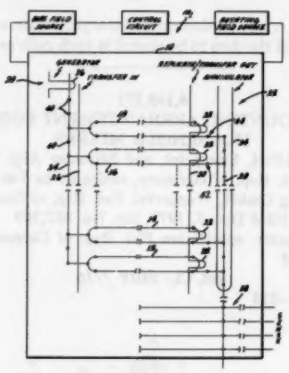
ASSOCIATIVE MEMORIES USING MAGNETIC BUBBLES

Farooq M. Quadri, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 11, 1977, Ser. No. 786,454

Int. Cl.[2] G11C *19/08*

U.S. Cl. 365—12 **10 Claims**



1. An associative magnetic domain memory comprising:

a domain propagation structure including magnetic elements disposed in an arrangement on which magnetic domains propagate in response to a rotating in-plane magnetic field;

the arrangement including a predetermined number of storage loops having a predetermined number of magnetic elements on which said domains circulate, said domains or absence of said domains on said magnetic elements in said storage loops representing bits of binary information;

write-in means and read-out means disposed relative to said storage loops; and

said write-in means including, means for generating bits and propagating said bits to positions adjacent said storage loops, one bit for each storage loop as a set of bits with a subset of said bits representing an address and the rest of said set being data bits, and means for transferring said set of bits into said storage loops for storage therein;

said read-out means including means for forming replicas of sets of bits in said storage loops, means for transferring said replica sets one at a time, means for receiving and sensing said transferred replica sets, and means for annihilating said transferred replica sets if said address does not match the desired address criteria so that successive replica sets of bits may be formed and transferred without waiting until the data bits of the unmatched address are serially transferred out of the read-out means.

4,149,268

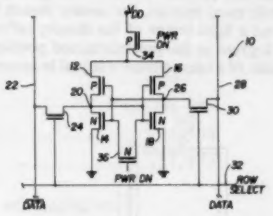
DUAL FUNCTION MEMORY

Ronald S. Waters, Melbourne Beach, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Aug. 9, 1977, Ser. No. 823,070

Int. Cl.[2] G11C *11/40, 17/00*

U.S. Cl. 365—95 **17 Claims**



1. A method for causing a single unbalanced bistable memory cell having storage nodes, said unbalanced memory cell including a pair of cross-coupled transistor inverters, said inverters having unequal impedances such that upon application of power to said unbalanced cell they assume a predetermined one of two stable states determined by the impedance characteristics of the cell inverters, and powered by a power supply to function both as a read only and a read/write memory comprising the steps of:

discharging said storage nodes when said power supply is disconnected from said cell;

reconnecting said power supply to said cell while preventing further discharge of said nodes to cause said cell to assume one of its two stable states determined by the unbalance of said cell; and

causing said cell to assume either of its stable states in response to a write command irrespective of the state determined by the cell unbalanced.

4,149,269

HOLOGRAPHIC READING APPARATUS WITH AN AREA IDENTIFICATION AND DENSITY REFERENCE SCAN

Michiharu Abe, and Hiroyoshi Funato, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1977, Ser. No. 837,493

Claims priority, application Japan, Sep. 29, 1976, 51-116899; Dec. 1, 1976, 51-143515

Int. Cl.[2] G11C *7/00, 8/00, 13/04*

U.S. Cl. 365—215 **7 Claims**

1. An apparatus for reading a selected hologram of a plurality of holograms formed on a sheet, each hologram having an information portion and an identification portion, the apparatus comprising:

reconstruction beam means for producing a reconstruction beam to form a reconstructed light image of one of the holograms;

sensor means for reading the light image and thereby the hologram;

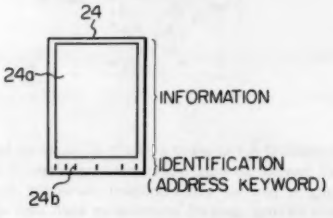
first scan means for producing relative scanning movement between the reconstruction beam means, sheet and sensor means so that the holograms are sequentially moved to a predetermined position in the reconstruction beam and read by the sensor means;

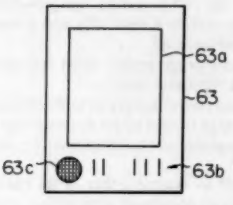
second scan means for producing relative scanning movement between the reconstruction beam means, sheet and sensor means for reading the information portion of a hologram in the predetermined position; and

logical control means for controlling the sensor means, first scan means and second scan means in such a manner that the sensor means reads the identification portion of the hologram in the predetermined position and the logical control means determines whether the hologram in the

predetermined position is the selected hologram, controls the first scan means to continue scanning if the hologram in the predetermined position is not the selected hologram and controls the second scan means to read the information portion of the hologram in the predetermined position if the hologram in the predetermined position is the selected hologram;

the identification portion of each hologram comprising a density reference section, the sensor means being operative to read a light image of the density reference section of the hologram in the predetermined position and adjust a magnitude of a bias reference signal in accordance therewith;





each density reference section comprising a pattern of lines, the sensor means comprising a sensor for reading the density reference section, spacings between adjacent lines being such that spacings between light images of said adjacent lines are smaller than a minimum dimension of a light receiving area of the sensor;

the sensor means being constructed to combine electrical signals produced by reading the information area of the selected hologram with the bias reference signal and produce output signals in accordance therewith;

the sensor means comprising comparator means receiving as inputs the electrical signals produced by reading the information area of the hologram and the bias reference signal, a quantization threshold of the comparator means corresponding to the bias reference signal.

4,149,270

VARIABLE THRESHOLD DEVICE MEMORY CIRCUIT HAVING AUTOMATIC REFRESH FEATURE

James R. Cricchi, Catonsville, Md., and Boyce T. Ahlport, Rolling Hills Estates, Calif., assignors to Westinghouse Electric Corp., Pittsburgh, Pa. and Northrop Corporation, Los Angeles, Calif.

Filed Sep. 26, 1977, Ser. No. 836,332

Int. Cl.[2] G11C *7/00, 11/40*

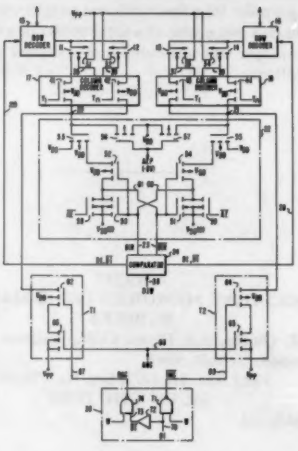
U.S. Cl. 365—222 **5 Claims**

1. A temporary store memory circuit having a plurality of variable threshold level semiconductor memory cells, said circuit comprising:

first means to apply a polarization voltage to selected semiconductor cells to vary the threshold level at times when the data stored and the data to be stored in such cells are different;

second means to sense the threshold level of a selected semiconductor memory cell; and

third means governed by the second means to apply the effective polarization voltage in accordance with a predetermined sensed threshold level at times when the threshold level is in a predetermined marginal state and the data stored and the data to be stored in such cells are the same.



4,149,271

SHAFT-MOUNTING ARRRANGEMENT FOR USE IN HOUSEHOLD MIXERS

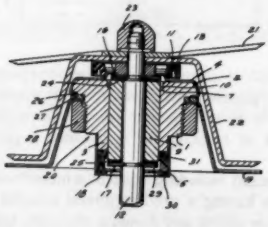
Paul-Ulrich Uibel, Ennepetal, and Miroslav Aigl, Wuppertal, both of Fed. Rep. of Germany, assignors to Vorwerk & Co Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Dec. 5, 1977, Ser. No. 857,769

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1976, 7638118

Int. Cl.[2] B01F *7/16*

U.S. Cl. 366—314 **10 Claims**



1. An arrangement, particularly for a household mixer, comprising a detachable mixing container of the household mixer, and having a bottom wall provided for mounting thereon a blade-carrying shaft, an elongated carrier body having longitudinally spaced end faces, a passage bounded by an internal surface and extending between and opening into said end faces, said carrier body being rigid with the bottom wall of the container and penetrating therethrough so that one of said end faces is located interiorly and the other of said end faces exteriorly of the container; a friction bearing accommodated in said passage of said carrier body and surrounding the blade-carrying shaft, said bearing having an external surface which faces said internal surface of said carrier body and bounds therewith an annular groove at said one end face of said carrier body; and two covering caps respectively overlapping and connected to said end faces of said carrier body and having respective apertures through which the blade-carrying shaft passes out of said passage.

DESIGN PATENTS

GRANTED APR. 10, 1979

ERRATA

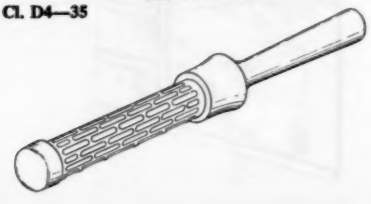
For CLASS	See PATENT NO.
D03–044	251,574
D03–044	251,575

DESIGNS

APRIL 10, 1979

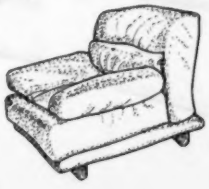
251,516
FINGER BRUSH
Arthur R. Guedel, 5661 Laurel St., Indianapolis, Ind. 46227
Filed Apr. 13, 1977, Ser. No. 787,070
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—13

251,517
BRUSH HEAD AND HANDLE
Maurice C. Baudon, Beauvais, France, assignor to S.A. Ets Lardenois, Hermes, France
Filed Oct. 20, 1977, Ser. No. 843,951
Claims priority, application Switzerland, May 25, 1977, 65 101
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—35

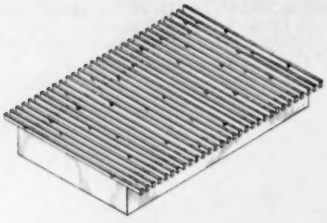


251,518
CHILD'S SWING
Robert J. Boudreau, and Joel C. Cunard, both of Bedford, Pa., assignors to Hedstrom Co., Bedford, Pa.
Division of Ser. No. 759,653, Jan. 17, 1977. This application Jul. 13, 1978, Ser. No. 924,452
Term of patent 7 years
Int. Cl. D6—*99*
U.S. Cl. D6—10

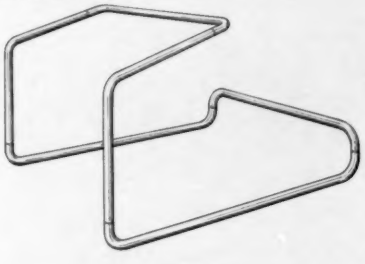
251,519
UPHOLSTERED SEAT
Ernesto Radaelli, Gallarate, Italy, assignor to Fratelli Saporiti, Italy
Filed Mar. 17, 1977, Ser. No. 778,449
Claims priority, application Italy, Sep. 17, 1946, 60923/76[U]
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67

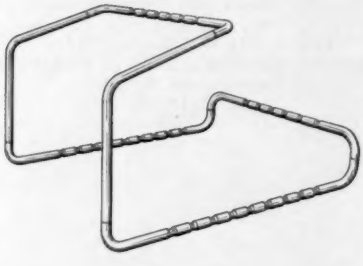


251,520
PLATFORM BED
Michael G. Staed, and Elizabeth A. Staed, both of 12185 Dove Cir., Laurel, Md. 20811
Filed Jun. 13, 1975, Ser. No. 586,625
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79

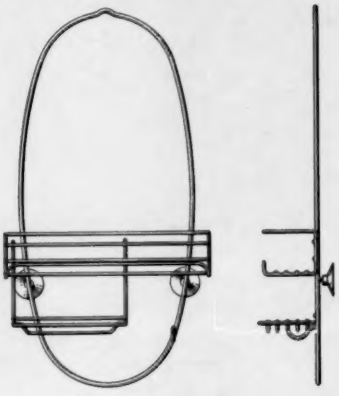


251,521
BEDSTEAD
Sidney Gibson, 229 Deloraine Ave., Toronto, Ontario, Canada (M5M 2B2)
Filed Feb. 25, 1977, Ser. No. 772,290
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79

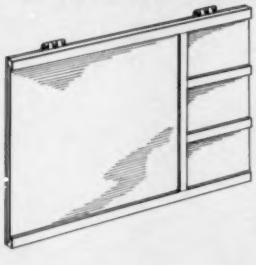




251,522
SHOWER CADDY
George S. Chapman, 1712 Park Blvd., Cherry Hill, N.J. 08002
Filed Dec. 12, 1977, Ser. No. 859,306
Term of patent 14 years
Int. Cl. D6—*04;* D23—*02*
U.S. Cl. D6—91

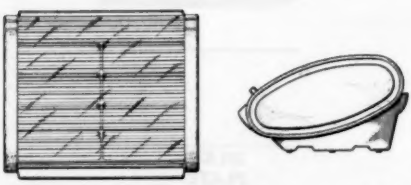


251,523
DISPLAY RACK FOR TAPESTRY SAMPLES OR THE LIKE
Stig Rylander, Karlavagen 70, Stockholm, Sweden
Filed Oct. 6, 1976, Ser. No. 739,101
Claims priority, application Sweden, Apr. 8, 1976, 801/76
Term of patent 14 years
Int. Cl. D20—*02;* D6—*07*
U.S. Cl. D6—114

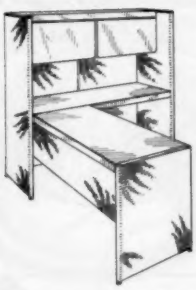


251,524
SHELVING FOR WINDOWS
William M. Boyajian, 269 Huron Ave., Cambridge, Mass. 02138
Filed Jun. 23, 1977, Ser. No. 809,283
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—135

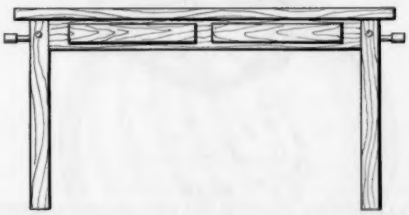
251,525
ARTICLE DISPLAY CABINET
Theophile L. De Zinno, 1337 SW. 14 St., Miami, Fla. 33133
Filed Dec. 22, 1976, Ser. No. 753,604
Term of patent 14 years
Int. Cl. D20—*02*; D6—*04*
U.S. Cl. D6—150



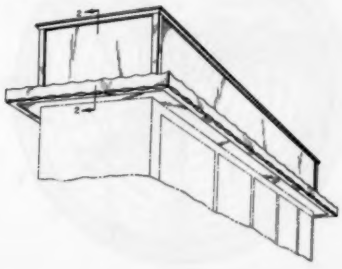
251,526
COMBINED DESK AND WORK STORAGE UNIT
Otto W. Zapf, Eschborn, Fed. Rep. of Germany, assignor to Knoll International, Inc., Greenwich, Conn.
Filed Dec. 17, 1976, Ser. No. 751,881
Claims priority, application Switzerland, Jun. 18, 1976, 63313/76
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—167



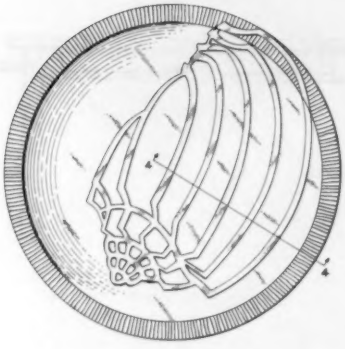
251,527
TABLE
Philip L. Tome, Malta, Ohio, assignor to Taylor Woodcraft, Malta, Ohio
Filed Jul. 20, 1977, Ser. No. 817,521
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



251,528
COMBINED CABINET SOFFIT AND PLATE SUPPORT UNIT
Ronald D. Pearson, 22015-146th Ave. East, Graham, Wash. 98338
Division of Ser. No. 638,369, Dec. 8, 1975, Pat. No. Des. 247,208. This application Aug. 2, 1977, Ser. No. 821,214
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191

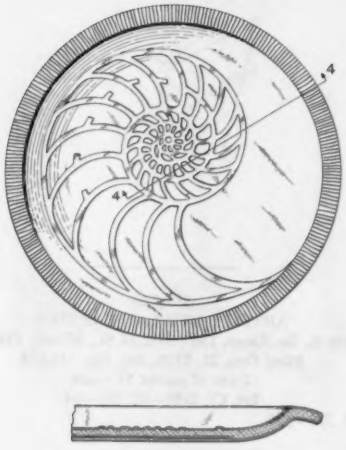


251,529
PLATE
Edward P. Reavey, Jr., Bernardsville, N.J., assignor to Interpace Corporation, Parsippany, N.J.
Filed Aug. 15, 1977, Ser. No. 824,435
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—35

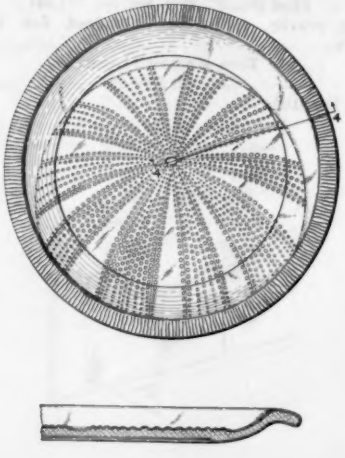


251,530
PLATE
Edward P. Reavey, Jr., Bernardsville, N.J., assignor to Interpace Corporation, Parsippany, N.J.
Filed Aug. 15, 1977, Ser. No. 824,436
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—35

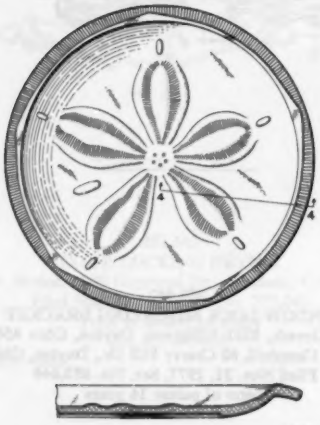
251,531
PLATE
Edward P. Reavey, Jr., Bernardsville, N.J., assignor to Interpace Corporation, Parsippany, N.J.
Filed Aug. 15, 1977, Ser. No. 824,437
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—35



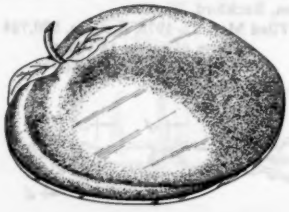
251,532
PLATE
Edward P. Reavey, Jr., Bernardsville, N.J., assignor to Interpace Corporation, Parsippany, N.J.
Filed Aug. 15, 1977, Ser. No. 824,438
Term of patent 14 years
Int. Cl. D7—*35*
U.S. Cl. D7—35



251,533
PLATE
Edward P. Reavey, Jr., Bernardsville, N.J., assignor to Interpace Corporation, Parsippany, N.J.
Filed Aug. 15, 1977, Ser. No. 824,439
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—35

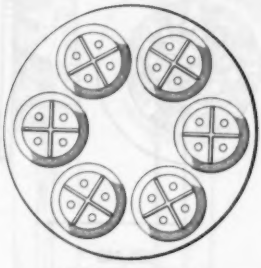


251,534
CUTTING AND SERVING BOARD OR SIMILAR ARTICLE
Robert S. Lutzker, 21 Lee Ave., East Williston, N.Y. 11596
Filed Feb. 17, 1976, Ser. No. 658,395
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—46



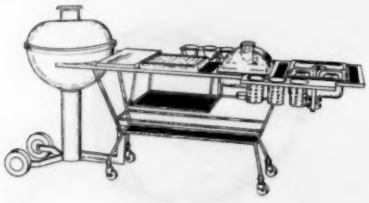
251,535
CUTTING AND SERVING BOARD OR SIMILAR ARTICLE
Robert S. Lutzker, 21 Lee Ave., East Williston, N.Y. 11596
Filed Feb. 17, 1976, Ser. No. 658,396
Term of patent 14 years
Int. Cl.[2] D7—*04*
U.S. Cl. D7—46

251,536
HOLDING TRAY FOR COOKING IN MICROWAVE OVENS
Larry J. Hansen, 1733 S. Fawcett, Tacoma, Wash. 98402
Filed Mar. 14, 1977, Ser. No. 777,552
Term of patent 14 years
Int. Cl.[2] D7—*02*
U.S. Cl. D7—96

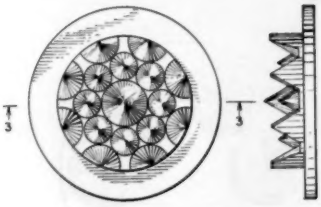


251,537
BARBEQUE BUFFET SERVING CART
Edmund Vredenburg, Salt Lake City, Utah, assignor to Vredenburg Leisure Time Products, Salt Lake City, Utah
Filed Oct. 27, 1977, Ser. No. 846,276
Term of patent 14 years
Int. Cl.[2] D7—*02*; D12—*02*
U.S. Cl. D7—108

251,538
BARBEQUE (CIRCULAR) BUFFET SERVING CART
Edmund Vredenburg, Salt Lake City, Utah, assignor to Vredenburg Leisure Time Products, Salt Lake City, Utah
Filed Dec. 12, 1977, Ser. No. 859,458
Term of patent 14 years
Int. Cl. D7—*02;* D12—*02*
U.S. Cl. D7—108



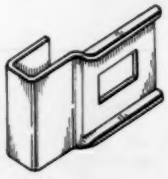
251,539
SCRUBBING ELEMENT FOR ATTACHMENT TO PALM OR FINGER SURFACES OF AN ELASTIC GLOVE
Sam Kupperman, Chicago, and Dennis Kupperman, Glenview, both of Ill., assignors to Rub-A-Venture, Skokie, Ill.
Filed Jul. 5, 1977, Ser. No. 813,117
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—178



251,540
WEEDING TOOL
Robert R. Faltin, 83 San Benito Way, Novato, Calif. 94947
Filed Jul. 29, 1977, Ser. No. 820,143
Term of patent 14 years
Int. Cl. D8—*01, 02*
U.S. Cl. D8—6

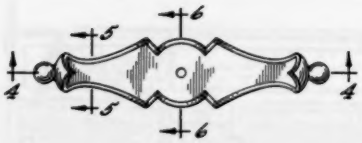
251,541
PULL
Teresa R. B. Pittenger, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Mar. 27, 1978, Ser. No. 890,712
Term of patent 14 years
Int. Cl. D8—*06;* D7—*02*
U.S. Cl. D8—318

251,542
WINDOW LOCK MOUNTING BRACKET
Charles J. Ozvath, 5391 Hillgrove, Dayton, Ohio 45415, and Burlon P. Campbell, 60 Cherry Hill Dr., Dayton, Ohio 45440
Filed Nov. 21, 1977, Ser. No. 853,644
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—343



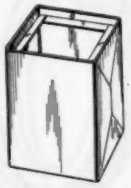
251,543
ESCUTCHEON
Teresa R. B. Pittenger, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Mar. 27, 1978, Ser. No. 890,714
Term of patent 14 years
Int. Cl. D8—*09;* D7—*02*
U.S. Cl. D8—350

251,544
ESCUTCHEON
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Mar. 27, 1978, Ser. No. 890,848
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—350



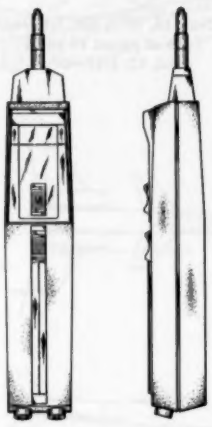
251,545
CORD LOCKING DEVICE
Ogden W. Boden, 1580 Gaywood Dr., Altadena, Calif. 91001
Filed Mar. 7, 1977, Ser. No. 775,265
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—383

251,546
PACKAGING CONTAINER
Lars G. Larsson, and Richard L. Bruke, both of Malmö, Sweden, assignors to Aktiebolaget Platmanufaktur, Malmö, Sweden
Filed Aug. 9, 1976, Ser. No. 712,877
The portion of the term of this patent subsequent to Aug. 30, 1991, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—242



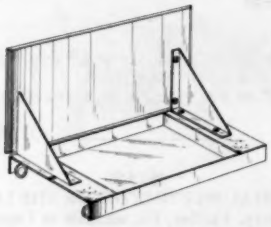
251,547
DIGITAL THERMOMETER
Allan L. McLeod, P.O. Box 18484, Wichita, Kans. 67218
Continuation-in-part of Ser. No. 554,410, Mar. 3, 1975, Pat. No. Des. 244,124. This application Nov. 1, 1976, Ser. No. 737,860
The portion of the term of this patent subsequent to Apr. 26, 1991, has been disclaimed.
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57

251,548
DIGITAL MULTIMETER OR THE LIKE
Francis O. Perry, Yardley, Pa., assignor to Logical Technical Services Corp., New York, N.Y.
Filed Jun. 3, 1977, Ser. No. 803,141
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78

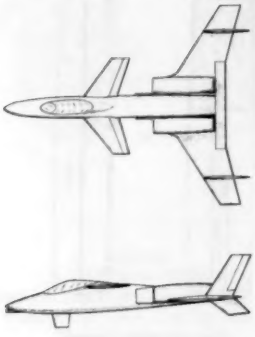


251,549
BUFFET SERVING CART
Edmund Vredenburg, Salt Lake City, Utah, assignor to Vredenburg Leisure Time Products, Salt Lake City, Utah
Filed Oct. 27, 1977, Ser. No. 846,275
Term of patent 14 years
Int. Cl. D12—*02*; D7—*02*
U.S. Cl. D12—22

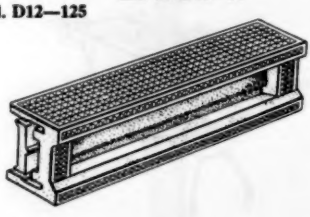
251,550
STORAGE CART
Robert F. Bladis, 2 High Point Dr., Mountainside, N.J. 07092
Filed Aug. 24, 1977, Ser. No. 827,139
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—25



251,551
AIRCRAFT
Gordon Rosenthal, Jericho, N.Y., assignor to Fairchild Industries, Inc.
Filed Nov. 16, 1976, Ser. No. 742,410
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—78



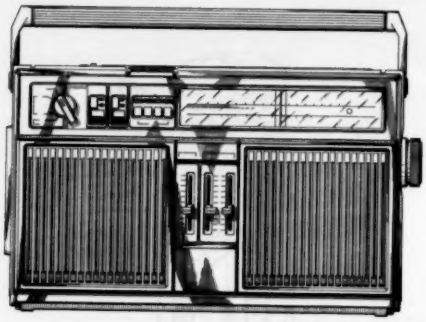
251,552
BICYCLE PEDAL TREAD
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Co., Inc., Maysville, Ky.
Filed Jan. 9, 1978, Ser. No. 868,151
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—125

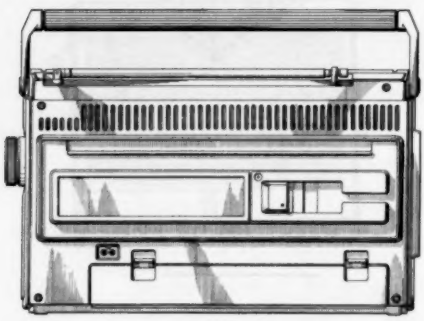


251,553
VEHICLE TIRE
Takeshi Sato, Akigawa, and Hiroshi Kojima, Hino, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Jun. 23, 1977, Ser. No. 809,166
Claims priority, application Japan, Dec. 27, 1976, 51-50340
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—141

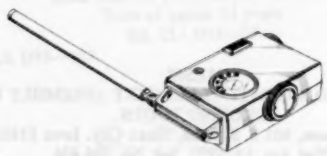
251,554
VEHICLE TIRE
Yoshiichi Kasahara, Tokorozawa, and Hiroshi Kojima, Hino, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Jul. 20, 1977, Ser. No. 817,124
Claims priority, application Japan, Jan. 31, 1977, 52-2513
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146

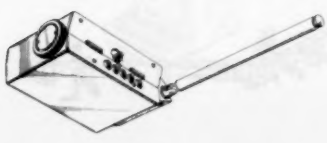
251,555
COMBINED RADIO AND TAPE PLAYER OR SIMILAR ARTICLE
Paul J. Klucznik, 7587 King Rd., Manlius, N.Y. 13104
Filed May 2, 1977, Ser. No. 792,673
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—5



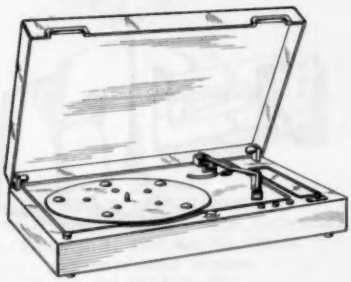


251,556
TUNING ADAPTER FOR TAPE RECORDERS
Toshiko Kadota, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan
Filed Feb. 15, 1977, Ser. No. 768,853
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—11



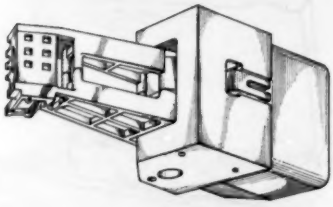


251,557
RECORD PLAYER
Dieter Rams, Kronberg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Nov. 23, 1976, Ser. No. 744,231
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—14



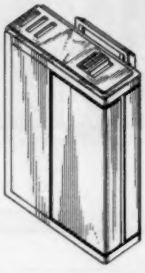
251,558
TONE ARM
Cary L. Christie, Simi Valley, Calif., and Makoto Ikeda, Machida, Japan, assignors to Infinity Systems, Inc.
Filed Mar. 31, 1977, Ser. No. 783,413
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—27

251,559
ROTARY ACTUATOR FOR POSITIONING MAGNETIC HEAD ADJACENT THE SURFACE OF A MAGNETIC DISC
Danny L. Kilmer, Tujunga, and Robert F. Stebe, Thousand Oaks, both of Calif., assignors to SLI Industries, Woodland Hills, Calif.
Filed Oct. 26, 1976, Ser. No. 735,814
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—40



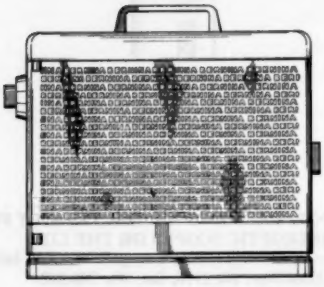
251,560
HAND-HELD OPTICAL CHARACTER RECOGNITION READER
William R. Smith, Mountain View, and Peter A. Ronzani, Saratoga, both of Calif., assignors to Caere Corporation, Mountain View, Calif.
Filed Jun. 13, 1977, Ser. No. 806,151
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—40

251,561
RADIO PAGER OR SIMILAR ARTICLE
Richard J. Toth, Oakland Park, and Donald K. Krumin, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 10, 1977, Ser. No. 776,325
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70

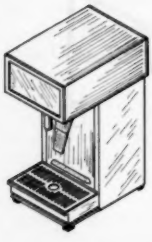


251,562
FRAME AND MOUNTING BRACKET ASSEMBLY FOR GROUND TOOLS
Elmer K. Hansen, 801 S. Martha, Sioux City, Iowa 51102
Filed Apr. 11, 1977, Ser. No. 786,404
Term of patent 14 years
Int. Cl.[2] D15—*03*
U.S. Cl. D15—33

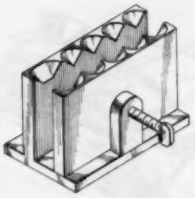
251,563
SEWING MACHINE CASING
Fritz Gegauf, Steckborn, Switzerland, assignor to Fritz Gegauf Aktiengesellschaft Bernina-Nähmaschinenfabrik, Switzerland
Filed Feb. 2, 1976, Ser. No. 654,225
Term of patent 14 years
Int. Cl.[2] D3—*02*
U.S. Cl. D15—75



251,564
BEVERAGE DISPENSER
William B. MacKrell, New Brighton, Minn., assignor to The Cornelius Company, Minneapolis, Minn.
Filed Feb. 11, 1977, Ser. No. 767,938
Term of patent 14 years
Int. Cl.[2] D15—*08*
U.S. Cl. D15—112



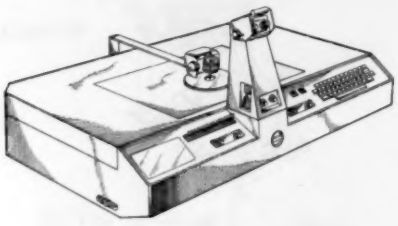
251,565
JEWELER'S METAL MOLD ASSEMBLY
Andrew S. Waters, 6219 Del Norte, Dallas, Tex. 75225
Filed Oct. 4, 1976, Ser. No. 728,983
Term of patent 14 years
Int. Cl.[2] D15—*09*
U.S. Cl. D15—136



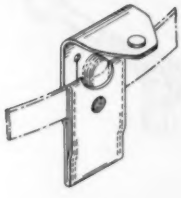
251,566
ADJUSTABLE HANDLE
Lenard E. Moen, 7914 Michigan, Whittier, Calif. 90602
Filed Apr. 21, 1977, Ser. No. 789,696
Term of patent 14 years
Int. Cl.[2] D15—*99*
U.S. Cl. D15—142

251,567
FLASHLIGHT APPARATUS FOR PHOTOGRAPHIC PURPOSES
Yuzo Tsuruta, Tokyo, Japan, assignor to Sunpak Corporation, Tokyo, Japan
Filed Aug. 1, 1977, Ser. No. 820,650
Term of patent 14 years
Int. Cl.[2] D16—*05*
U.S. Cl. D16—42

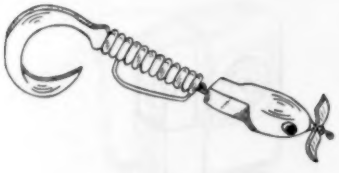
251,568
NUMERICAL STEREO COMPILER OR THE LIKE
H. Dell Foster, San Antonio, Tex., assignor to Keuffel & Esser Company, Morristown, N.J.
Filed May 10, 1977, Ser. No. 795,574
Term of patent 14 years
Int. Cl.[2] D16—*06*
U.S. Cl. D16—48



251,569
KNIFE SHEATH
Marshall B. Johnson, Chillicothe, Ohio, assignor to Wear-Ever Aluminum, Inc.
Filed Feb. 22, 1977, Ser. No. 770,408
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—14

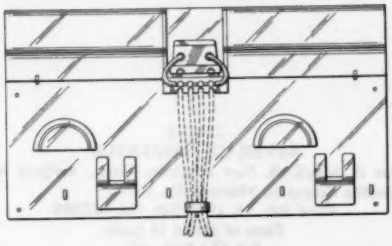


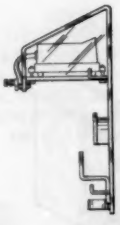
251,570
TOPWATER WORM LURE
Larry V. Gann, 211 Kitterman, Bay, Ark. 72411
Filed Jun. 30, 1977, Ser. No. 811,962
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



251,571
CARTRIDGE FOR SWIMMING POOL CHLORINATORS
Martin Liebert, Rancho Palos Verdes, Calif., assignor to GPS Industries, Los Angeles, Calif.
Filed Aug. 22, 1977, Ser. No. 826,933
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3

251,572
COMBINED RACK AND AIR DRYING UNIT FOR FIBEROPTIC SCOPES OR THE LIKE
Armin V. Banez, 510 Gypsy La., Youngstown, Ohio 44505
Filed Nov. 10, 1976, Ser. No. 740,858
Term of patent 14 years
Int. Cl. D6—*04;* D24—*02*
U.S. Cl. D24—31



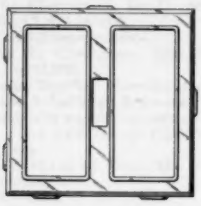


251,573

TRANSLUCENT INTERLOCKING PANEL MEMBER FOR CEILINGS OR THE LIKE

Edward J. Maresca, Fort Lauderdale, Fla., assignor to Cal-Mar Industries, Inc.

Filed Apr. 19, 1977, Ser. No. 788,987
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—91



251,574

HANDBAG

Angelo Molinari, 30 George Brown Plz., Amity Harbor, N.Y. 11701, and Jesse N. Randall, 527 Madison Ave., New York, N.Y. 10022

Filed Feb. 3, 1978, Ser. No. 874,919
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—44

251,575

HANDBAG

Angelo Molinari, 30 George Brown Plz., Amity Harbor, N.Y. 11701, and Jesse N. Randall, 527 Madison Ave., New York, N.Y. 10022

Filed Mar. 6, 1978, Ser. No. 884,031
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—44

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TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF APRIL, 1979

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. J. Troster GmbH & Co. KG: *See*—
Weitz, Otto, 4,148,266, Cl. 111-52.000.

A/S Cheminova: *See*—
Madsen, Hans B.; Klemmensen, Per D.; and Kolind-Andersen, Hans, 4,148,901, Cl. 424-263.000.

A/S Skandinavisk Tobakskompagni: *See*—
Mortensen, Niels E.; Christiansen, Bent E.; and Kjaer, Ian, 4,148,238, Cl. 83-152.000.

Ab der Halden, Charles; Espeillac, Marcellin; and Szabo, Georges, to Compagnie Francaise de Raffinage. Regeneration of metal promoted platinum group catalyst by superhalogenating at the end of a hydrocarbon conversion cycle. 4,148,749, Cl. 252-415.000.

AB Nike Hydraulik: *See*—
Bjork, Bengt A., 4,148,210, Cl. 72-457.000.

AB Svenska Flaktfabriken: *See*—
Brekell, Helge, 4,148,476, Cl. 271-194.000.

Abbott Laboratories: *See*—
Disinski, Francis J., 4,148,223, Cl. 73-359.00R.
Meyer, Leonard J., 4,148,318, Cl. 128-269.000.

Abe, Michiharu; and Funato, Hiroyoshi, to Ricoh Co., Ltd. Holographic reading apparatus with an area identification and density reference scan. 4,149,269, Cl. 365-215.000.

Abe, Shuzo; Endo, Yukio; and Otsuki, Yoshito, to Kabushiki Kaisha Seikosha. Buzzer mechanism for alarm clock or the like. 4,148,182, Cl. 58-16.00R.

Abe, Takeshi: *See*—
Morozumi, Mituharu; Kojima, Gen; and Abe, Takeshi, 4,148,982, Cl. 526-58.000.

ACAR Laminators Corp.: *See*—
Jacaruso, Salvatore; and Giuliano, Joseph A., 4,148,322, Cl. 128-464.000.

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Puccio, Guy S., 4,148,167, Cl. 52-396.000.

Acosta, Evelio. Safety box. 4,148,265, Cl. 109-59.00R.

Adair, Ronald B. Locking device for sliding windows and the like. 4,148,508, Cl. 292-258.000.

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DeRyke, Thomas V.; Fedesna, Kenneth J.; and Elms, Ronald D., 4,148,582, Cl. 355-97.000.

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Kulabukhov, Vadim A.; Allakhverdov, Eduvard R.; Perlin, Boris A.; Shteinberg, Grigory S.; Afanasiev, Anatoly I.; Sheludko, Valentin V.; Nudelman, Boris I.; Volkov, Valery G.; Salomasov, Vasily F.; and Startsev, Jury V., 4,148,601, Cl. 432-109.000.
Nudelman, Boris I.; Lisbaron, Vitaly I.; Kortnev, Vyacheslav P.; Sharova, Valentina P.; Imangulov, Vakel K.; and Afanasiev, Anatoly I., 4,148,620, Cl. 55-403.000.

Agarwal, Jagdish C.; Giberti, Richard A.; and Petrovic, Louis J., to Kennecott Copper Corporation. Prevention of scale formation in wet lime scrubbers. 4,148,615, Cl. 55-73.000.

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Drukier, Andrezej K.; Valette, Claude; and Waysand, Georges, 4,149,075, Cl. 250-336.000.

Agency of Industrial Science & Technology, Ministry of International Trade & Industry: *See*—
Yamashita, Mikio; and Kashiwagi, Hiroshi, 4,149,077, Cl. 250-423.00P.

AGFA-Gevaert AG: *See*—
Kluczynski, Achim; and Altmann, Erik, 4,148,449, Cl. 242-71.200.
Morcher, Bernhard; and Bruck, Rolf, 4,148,943, Cl. 427-256.000.
von Bonin, Wulf; Wolff, Erich; Krafft, Werner; and Matschke, Gunther, 4,148,653, Cl. 96-77.000.

AGFA-GEVAERT N.V.: *See*—
Schelfaut, Francois L.; Vanassche, Willy J.; Philippaerts, Herman A.; and Duville, Rene O., 4,148,647, Cl. 96-59.000.
Stievenart, Emile F.; Vackier, Leo N.; and Verlinden, Willy G., 4,148,274, Cl. 118-2.000.
Suys, Andre R.; and Van Landeghem, Willy K., 4,149,083, Cl. 250-486.000.
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Agulnek, Martin A.: *See*—
Crean, Peter A.; Lavallee, Pierre A.; and Agulnek, Martin A., 4,149,091, Cl. 250-566.000.

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Kamata, Sachio; and Sekine, Kunio, 4,148,108, Cl. 15-77.000.

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Madsen, Rud F., 4,148,214, Cl. 73-54.000.

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Thuillier, Germaine; Mignonac, Sylviane S. J.; and Bessin, Pierre A. R., 4,148,915, Cl. 424-308.000.

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Wood, Theodore H., 4,148,542, Cl. 339-126.0RS.

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Neubeck, Kurt; and Julien, Hermann, 4,148,123, Cl. 29-407.000.

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Breitenfellner, Franz; and Fink, Roland, 4,148,955, Cl. 428-143.000.
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Sexton, Peter; and DeCristofaro, Nicholas J., 4,148,973, Cl. 428-680.000.
Sturtevant, Robert L.; Karsay, Bela I.; and Gancy, Alan B., 4,148,836, Cl. 260-683.620.
Tanner, Lee E.; and Ray, Ranjan, 4,148,669, Cl. 148-3.000.

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Altenpohl, William F.; and Altenpohl, Paul J., 4,148,397, Cl. 209-559.000.

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Kluczynski, Achim; and Altmann, Erik, 4,148,449, Cl. 242-71.200.

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Fritts, Rex E., 4,149,057, Cl. 219-10.55B.

Amazonen-Werke H. Dreyer: *See*—
Gross-Scharmann, Franz, 4,148,364, Cl. 172-58.000.
Amchem Products, Inc.: *See*—
Kelly, Timm L., 4,148,670, Cl. 148-6.15R.
Amdahl Corporation: *See*—
Anderson, David L.; and Bishop, Richard L., 4,149,244, Cl. 364-200.000.
Amdal, Dagfinn O.: *See*—
Carlson, Reuben E.; and Amdal, Dagfinn O., 4,148,454, Cl. 248-221.300.
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American Chain & Cable Co., Inc.: *See*—
Molusis, Anthony J., 4,149,254, Cl. 364-510.000.
American Colloid Company: *See*—
Hughes, John; and Maul, Peter L., 4,148,662, Cl. 106-67.000.
American Cyanamid Company: *See*—
Kulick, Russell J.; and Moore, Sewell T., 4,148,665, Cl. 106-236.000.
Lies, Thomas A.; and Clapp, James W., 4,148,795, Cl. 546-189.000.
Wang, Samuel S.; and Smith, Eugene L., 4,148,720, Cl. 209-166.000.
American District Telegraph Company: *See*—
Enemark, Robert B.; and Richtarcsik, Paul S., 4,149,162, Cl. 340-636.000.
American Hoist & Derrick Company: *See*—
Hornagold, John T., 4,148,531, Cl. 308-3.00R.
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American Home Products Corporation: *See*—
Dheer, Surendra K.; and McGregor, William H., 4,148,785, Cl. 260-112.50R.
Santilli, Arthur A.; and Morris, Robert L., 4,148,801, Cl. 260-307.00G.
Sarantakis, Dimitrois, 4,148,786, Cl. 260-112.50R.
American Hospital Supply Corporation: *See*—
MacAnally, Richard B., 4,148,550, Cl. 350-54.000.
MacAnally, Richard B., 4,148,551, Cl. 350-54.000.
American Optical Corporation: *See*—
Prunier, Louis J., 4,148,160, Cl. 51-168.000.
American Original Corporation, The: *See*—
Marvin, John, 4,148,112, Cl. 17-53.000.
American Safety Equipment Corporation: *See*—
Sugar, Joseph, 4,148,446, Cl. 242-107.40A.
American Technology Corporation: *See*—
Estes, Earl M., 4,149,178, Cl. 358-10.000.
Ameron, Inc.: *See*—
Brindell, Gordon D.; and Fraccica, Richard A., 4,148,950, Cl. 427-421.000.
AMF Incorporated: *See*—
Smith-Vaniz, W. R., 4,148,481, Cl. 273-54.00E.
Smith-Vaniz, William R.; and Kaenel, Reginald A., 4,148,480, Cl. 273-54.00E.
AMP Incorporated: *See*—
Fleischhacker, James E.; Roberts, Lincoln E.; and Willette, Albert D., 4,148,118, Cl. 29-33.00K.
Fritz, William B.; and Hopkins, John R., 4,149,026, Cl. 174-32.000.
Stauffer, Larry R.; Stape, William J.; and Donnelly, Charles W., Sr., 4,148,130, Cl. 29-566.300.
Ampex Corporation: *See*—
Weber, D. William, 4,149,117, Cl. 318-315.000.
Amtel, Inc: *See*—
Karl, Robert D.; and Reid, William R., Jr., 4,148,107, Cl. 9-8.00P.
Anaconda Company, The: *See*—
Arentzen, Charles, 4,148,630, Cl. 75-74.000.
Andersen, Paul R.; and Kramer, Rodney C., to Square D Company. Contact control assembly for a circuit breaker. 4,149,129, Cl. 335-21.000.
Anderson, David L.; and Bishop, Richard L., to Amdahl Corporation. Data processing system including a program-executing secondary system controlling a program-executing primary system. 4,149,244, Cl. 364-200.000.
Anderson, David R.: *See*—
Steffanus, Robert D.; and Anderson, David R., 4,148,245, Cl. 89-7.000.
Anderson, Ernest L. Earth working attachment for tractors. 4,148,365, Cl. 172-781.000.
Anderson, Joseph A., to Haybuster Manufacturing, Inc. Self feeding bunk or barrier. 4,148,278, Cl. 119-60.000.
Andress, Harry J., Jr., to Mobil Oil Corporation. Rust inhibitor and compositions thereof. 4,148,605, Cl. 422-7.000.
Andrews, Warren: *See*—
D'Alessio, Frank P.; and Andrews, Warren, 4,149,093, Cl. 307-10.0BP.
Antos, George J., to UOP Inc. Hydrocarbon conversion with an acidic multimetallic catalytic composite. 4,148,715, Cl. 208-139.000.
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Aoki, Ren: *See*—
Wada, Tasaku; Aoki, Ren; and Fujiwara, Mitsugu, 4,149,196, Cl. 358-286.000.
Aono, Masami, to Tokico Ltd. Brake shoe clearance adjusting device. 4,148,379, Cl. 188-79.50P.
Apura GmbH: *See*—
Baumann, Manfred; and Besserer, Walter, 4,148,442, Cl. 242-55.300.
Arcamone, Federico: *See*—
Palamidessi, Giorgio; Zarini, Franco; Franceschi, Giovanni; Schioppacassi, Giovanna; and Arcamone, Federico, 4,148,996, Cl. 544-26.000.
Archambault, Yves; and Kaminsky, Didier, to Thomson-CSF. Diode and dielectric resonator microwave oscillator. 4,149,126, Cl. 331-56.000.
Arentzen, Charles, to Anaconda Company, The. Direct production of copper metal. 4,148,630, Cl. 75-74.000.
Armco Steel Corporation: *See*—
Byrd, Fred; and Fisher, James A., 4,148,946, Cl. 427-319.000.
Armour Pharmaceutical Company: *See*—
Rubino, Andrew M.; Jones, John L.; and Bretschneider, Edward S., 4,148,812, Cl. 260-429.300.
Arndt, Henry C.: *See*—
Woessner, Warren D.; Sih, Charles J.; Kluender, Harold C.; Arndt, Henry C.; and Biddlecom, William G., 4,149,017, Cl. 568-665.000.
Arndt, Herbert L., deceased; by Arndt, Margaret L., administratrix; Keller, John H.; McKenna, Charles M.; and Winnard, James R., to International Business Machines Corporation. Apparatus for maintaining ion bombardment beam under improved vacuum condition. 4,149,084, Cl. 250-492.00A.
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Arndt, Herbert L., deceased; Arndt, Margaret L., administratrix; Keller, John H.; McKenna, Charles M.; and Winnard, James R., 4,149,084, Cl. 250-492.00A.
Arnold, James J., deceased: *See*—
Campbell, Donn V.; and Arnold, James J., deceased, 4,149,170, Cl. 343-885.000.
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Art Products, Inc.: *See*—
Lamb, Terrence R., 4,148,506, Cl. 281-45.000.
Artamonov, Alexei A.: *See*—
Berezkin, Viktor G.; Bochkov, Alexandr S.; Brazhnikov, Vadim V.; Artamonov, Alexei A.; and Balasanov, Leonid G., 4,148,315, Cl. 128-218.00C.
Artemiev, Lev N.; Batjukov, Vladimir I.; and Fadeev, Alexandr I. Drum of storing fuel assemblies of nuclear reactor. 4,149,087, Cl. 250-507.000.
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Morozumi, Mituharu; Kojima, Gen; and Abe, Takeshi, 4,148,982, Cl. 526-58.000.
Asahi, Kunihiko: *See*—
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Asam, Adolf R., to International Telephone & Telegraph Corp. Multifiber cable splicer. 4,148,553, Cl. 350-96.210.
Asami, Shunichi; Seita, Toru; and Shimizu, Akihiko, to Toyo Soda Manufacturing Co., Ltd. Method of improving characteristics of cation-exchange membrane by swelling in water miscible organic solvent. 4,148,979, Cl. 521-27.000.
ASEA Aktiebolag: *See*—
Stenkvist, Sven-Einar; and Widell, Bjorn, 4,149,024, Cl. 13-11.000.
Asher, James C.; and Hardy, Douglas A., to Atari, Inc. TV game cartridge and method. 4,149,027, Cl. 174-52.00R.
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Atari, Inc.: *See*—
Asher, James C.; and Hardy, Douglas A., 4,149,027, Cl. 174-52.00R.
Rains, Lyle V., 4,148,485, Cl. 273-86.00B.
Atkinson, Joseph G.; Rooney, Clarence S.; Belanger, Patrice C.; and Remy, David C., to Merck & Co., Inc. Antipsychotic, antiserotonin and antihistaminic pyrrolo[2,1-b][3]benzazepines. 4,148,903, Cl. 424-267.000.
Atkinson, Michael L., to Ball Corporation. Device for loading cylindrical articles. 4,148,402, Cl. 414-676.000.
Atkinson, Roger, to Itec, Inc. Identifier circuit for identifying party line subscribers. 4,149,040, Cl. 179-17.00A.
Atlantic Richfield Company: *See*—
Myers, Gary A., 4,148,613, Cl. 44-1.00R.
Automobiles Peugeot: *See*—
Sigwald, Jacques, 4,148,287, Cl. 123-122.00E.
Avco Corporation: *See*—
Langan, Marion J., 4,149,037, Cl. 179-15.0BL.
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Axelrod, Donald J.; and Flint, John R., to Bell & Howell Company. Automatic microfilm camera. 4,148,579, Cl. 355-41.000.
Axen, Rolf E. A. V.: *See*—
Carlsson, Jan P. E.; Axen, Rolf E. A. V.; Drevin, Hakan N. Y.; and Lindgren, Goran E. S., 4,149,003, Cl. 546-261.000.
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Babcock & wilcox Company, The: *See—*
Grant, Philip J., 4,148,708, Cl. 204-301.000.
Stump, Paul E., 4,148,207, Cl. 72-283.000.

Babjak, Juraj; Ettel, Victor A.; and Dymock, Kenneth R., to International Nickel Company, Inc., The. Stripping of cobalt from nickel-cobalt loaded organic. 4,148,631, Cl. 75-101.0BE.

Bach, Jean-Francois; and Hamburger, Jean, to Institute National de la Sante & de la Recherche Medicale (INSERM). Polypeptide possessing thymic activity. 4,148,886, Cl. 424-177.000.

Bachelet, Marc. Record players. 4,148,492, Cl. 274-15.00R.

Bachtiger, Hans, to Gygli Technik AG. Applying a reinforcing substance to a material having a textile surface. 4,148,604, Cl. 8-181.000.

Back, Gunter, to Hoechst Aktiengesellschaft. Apparatus for separating single sheets from a stack thereof. 4,148,474, Cl. 271-170.000.

Bailey, Larry M.: *See—*
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Bajka, Lech: *See—*
Gierek, Adam; Bajka, Lech; and Kolpak, Jan, 4,148,942, Cl. 427-241.000.

Baker, Don R.; and Hyzak, Daniel L., to Stauffer Chemical Company. Dialkyl amino ethyl amides as anti-ripening agents. 4,148,926, Cl. 426-333.000.

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Baker, Noel J., to W. R. Grace Ltd. Secondary photocuring of photocured printing plate, apparatus and method. 4,148,934, Cl. 427-54.000.

Baker, Robert L., to Chase Gardens Wholesale, Inc. Flower container. 4,148,427, Cl. 229-15.000.

Bakul, Valentin N.: *See—*
Fedoseev, Dmitry V.; Deryagin, Boris V.; Bakul, Valentin N.; Prikhna, Alexei I.; Gerasimenko, Valentin K.; Poltoratsky, Vladimir G.; Nikitin, Jury I.; Vnukov, Stanislav P.; and Varnin, Valentin P., 4,148,964, Cl. 428-403.000.

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Balke-Durr Aktiengesellschaft: *See—*
Schulte, Hugo; Muller, Wolfgang; Schlaich, Jorg; and Mayr, Gunter, 4,148,850, Cl. 261-109.000.

Ball Corporation: *See—*
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Bally Manufacturing Corporation: *See—*
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Balogh, Andras: *See—*
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Bangs, Leigh B.: *See—*
Hanlon, Robert G.; Craig, Joe A.; and Bangs, Leigh B., 4,148,748, Cl. 252-408.000.

Bar-Chaim, Nadav; Seidman, Ady; and Wiener-Avnear, Eliezer, to Ramot University Authority for Applied Research & Industrial Development Ltd.; and Ben Gurion University of the Negev, Research & Development Authority. System and method for the real-time conversion of two-color incoherent or coherent light to two-color coherent light. 4,149,073, Cl. 250-201.000.

Baraff, David R.: *See—*
Kos, Steven; and Baraff, David R., 4,149,197, Cl. 358-294.000.

Barber-Colman Company: *See—*
Meyers, Frederick J.; and Zille, Marvin H., 4,148,435, Cl. 236-13.000.

Bardenheuer, Friedrich; and Kolb, Gustav, to Mannesmann Aktiengesellschaft; and Kolb, Gustav. Apparatus for sampling molten metal. 4,148,221, Cl. 73-425.40R.

Barger, John J., to Combustion Engineering, Inc. Angled strip cladding system. 4,149,060, Cl. 219-73.000.

Bargeron, C. Brent; and Deters, Owen J., to United States of America, Health, Education & Welfare. Three dimensional laser Doppler velocimeter. 4,148,585, Cl. 356-28.500.

Barker, Michael H.; and Roberts, Alan G., to British Petroleum Company Limited, The. Combustor. 4,148,437, Cl. 239-424.000.

Barlow, Gordon A.; and Imatt, Alex, to Marvin Glass & Associates. Construction toy with reversible track having sound producing means. 4,148,152, Cl. 46-216.000.

Barnett, Gabriel; Gershaw, Nathan; and Mausner, Jack J., to Helena Rubinstein, Inc. Visible action gel toner. 4,148,875, Cl. 424-81.000.

Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, to Pfizer Inc. Therapeutic L- and DL- phenylglycines to treat diseases or disorders of reduced blood flow or oxygen availability. 4,148,920, Cl. 424-319.000.

Barson, Leslie, to Companion Pty. Limited. Frames for lanterns having a mantle. 4,149,225, Cl. 362-186.000.

Bartmann, Wilhelm: *See—*
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Barton, Kenneth R.: *See—*
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BASF Aktiengesellschaft: *See—*
Hoffmann, Herwig; Graefje, Heinz; Koernig, Wolfgang; and Winderl, Siegfried, 4,148,824, Cl. 260-585.00B.

BASF Wyandotte Corporation: *See—*
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Battey, James F.; Bersin, Richard L.; Reichelderfer, Richard F.; and Welty, Joseph M., to Dionex Corporation. Gas plasma reactor and process. 4,148,705, Cl. 204-192.00E.

Battisti, Ruggero; Cassar, Luigi; and Mazzaferro, Nicola, to Montedison S.p.A. Process for preparing 1-phenyl-3-aminopyrazoles. 4,149,005, Cl. 548-362.000.

Baudin, Rene: *See—*
Genty, Robert, 4,148,497, Cl. 280-479.00A.

Bauer Bros. Co., The: *See—*
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Bauer, James J.: *See—*
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Bauer, Richard G.: *See—*
Klemmensen, Daniel F.; and Bauer, Richard G., 4,148,746, Cl. 252-316.000.

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Baxter Travenol Laboratories, Inc.: *See—*
Deaton, Carlton D., 4,148,869, Cl. 424-1.000.
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Burger, Alex; Guth, Hans; Ludovici, Werner; and Rohe, Hermann, 4,148,752, Cl. 252-421.000.
Danziger, Harry; Immel, Otto; Kaiser, Bernd-Ulrich; Rampart, Guido; and Schwarz, Hans-Helmut, 4,148,792, Cl. 260-239.30A.
Danziger, Harry; Deibele, Ludwig; and Kaiser, Bernd-Ulrich, 4,148,793, Cl. 260-239.30A.
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Hartmann, Alfons; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,148,910, Cl. 424-285.000.
Schneider, Siegfried; and Niederprum, Hans, 4,148,867, Cl. 423-490.000.
Schubart, Rudiger; and Eholzer, Ulrich, 4,148,800, Cl. 260-306.70R.
von Bonin, Wulf; Preis, Lothar; and von Gizycki, Ulrich, 4,148,844, Cl. 260-874.000.

Bayley, Brian J., to Beckman Instruments, Inc. Friction reducing insert for swinging bucket rotors. 4,148,433, Cl. 233-26.000.

Bayley, Robert D., to Xerox Corporation. Polymerization and attrition method for producing toner with reduced processing steps. 4,148,741, Cl. 252-62.10P.

BBC Brown, Boveri & Company Limited: *See—*
Fiorentzis, Michael, 4,149,208, Cl. 361-42.000.
Frutschi, Hansu'rich, 4,148,191, Cl. 60-652.000.

Beardmore, John M.: *See—*
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Becker, Colman L., to Pullman Incorporated. Low energy ammonia synthesis process. 4,148,866, Cl. 423-359.000.

Becker, Edward W.; Bender, Thomas A. E.; Mahr, Peter F.; and Petree, Edwyn H., to Western Electric Company, Incorporated; and Bell Telephone Laboratories, Incorporated. Connector assembly tool. 4,148,138, Cl. 29-749.000.

Becker, Tilo; Storck, Hermann; and Dyer, Terence A., to Imperial Chemical Industries Limited. Method and apparatus for yarn treatment. 4,148,179, Cl. 57-350.000.

Beckley, Addison S.: *See—*
Jensen, Donald W.; and Beckley, Addison S., 4,148,505, Cl. 280-784.000.

Beckman Instruments, Inc.: *See—*
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Sawa, Kenneth B.; Peek, Willis M.; and Blanke, John D., 4,148,211, Cl. 73-23.000.

Beckstrom, Harold K.; and Bauer, James J., to Clark Equipment Company. Variable speed auger for use with a skid steer vehicle. 4,148,366, Cl. 173-28.000.

Bederman, Charles. Bundle of self-skidded Margach ingots. 4,148,394, Cl. 206-386.000.

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Beecham Group Limited: *See—*
Gardner, Derek V., 4,148,909, Cl. 424-283.000.

Beeland, William D.: *See—*
Thompson, Wallace M.; and Beeland, William D., 4,148,253, Cl. 100-97.000.

Beer, Zvi: *See—*
Ben-Zeev, Dan; Beer, Zvi; and Inbar, Dan, 4,149,079, Cl. 250-445.00T.

Behr, Michael I.; Blessum, Norman S.; and Iwan, Wilfred D., to Burroughs Corporation. Transducer positioning system. 4,149,198, Cl. 360-77.000.

Behrenz, Wolfgang: *See*—
Hartmann, Alfons; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,148,910, Cl. 424-285.000.

Belanger, Patrice C.: *See*—
Atkinson, Joseph G.; Rooney, Clarence S.; Belanger, Patrice C.; and Remy, David C., 4,148,903, Cl. 424-267.000.

Bell & Howell Company: *See*—
Axelrod, Donald J.; and Flint, John R., 4,148,579, Cl. 355-41.000.

Bell Telephone Laboratories, Incorporated: *See*—
Balzer, Gerry C.; and Feiner, Alexander, 4,149,042, Cl. 179-99.000.
Becker, Edward W.; Bender, Thomas A. E.; Mahr, Peter F.; and Petree, Edwyn H., 4,148,138, Cl. 29-749.000.
Gressitt, Tillman J.; and Smith, Arnold R., 4,149,028, Cl. 174-65.00R.
Pirz, Frank C., 4,149,242, Cl. 364-200.000.

Bell, William; Pearson, Keith; and Rendell, Richard W., to Imperial Chemical Industries Limited. Compound $CHCl_2$-O-CHF-CHF_2. 4,149,018, Cl. 568-684.000.

Bellamy, William G.; Tucker, John G.; and Wells, Hugh A., to Western Electric Company, Incorporated. Method of and apparatus for taping an article. 4,148,677, Cl. 156-187.000.

Bellina, Russell F.; and Fost, Dennis L., to Du Pont de Nemours, E. I., and Company. Substituted 2-higher alkyl-3-hydroxy-1,4-naphthoquinone carboxylic acid esters and their use as miticides. 4,148,918, Cl. 424-314.000.

Ben Gurion University of the Negev, Research & Development Authority: *See*—
Bar-Chaim, Nadav; Seidman, Ady; and Wiener-Avnear, Eliezer, 4,149,073, Cl. 250-201.000.

Ben-Zeev, Dan; Beer, Zvi; and Inbar, Dan, to Elscint, Ltd. Method of and means for scanning a body to enable a cross-section thereof to be reconstructed. 4,149,079, Cl. 250-445.00T.

Benden, Robert S.; and Parzuchowski, Richard S., to United Technologies Corporation. Apparatus for gas phase deposition of coatings. 4,148,275, Cl. 118-49.500.

Bender, Thomas A. E.: *See*—
Becker, Edward W.; Bender, Thomas A. E.; Mahr, Peter F.; and Petree, Edwyn H., 4,148,138, Cl. 29-749.000.

Bendix Corporation, The: *See*—
Idelsohn, Jerome M.; Mueller, Paul A.; Freedman, M. David; and Hebert, Raymond T., 4,149,089, Cl. 250-563.000.
Miller, Monroe A., Jr., 4,149,252, Cl. 364-456.000.

Benedict, Louis G.: *See*—
Chu, Vincent H. K.; Benedict, Louis G.; and Fox, Sidney V., 4,148,692, Cl. 201-36.000.

Bennett, Michael V.; and Sorlie, Donald T., to Deere & Company. Packer wheel assembly for tillage apparatus. 4,148,267, Cl. 111-85.000.

Benson, Herbert L., Jr., to Shell Oil Company. Regeneration of fused salt complex catalyst in hydrocarbon isomerization. 4,148,837, Cl. 260-683.740.

Benton, Robert L., to General Motors Corporation. Ball nut and screw assembly. 4,148,226, Cl. 74-459.000.

Beretta, Paolo; and Danello, Luigi, to Minnesota Mining and Manufacturing Company. Silver halide photographic emulsions reactively associated with antifog agents, and photographic elements containing said emulsions. 4,148,657, Cl. 96-100.00R.

Berezkin, Viktor G.; Bochkov, Alexandr S.; Brazhnikov, Vadim V.; Artamonov, Alexei A.; and Balasanov, Leonid G. Device for taking and injecting microsamples of liquid. 4,148,315, Cl. 128-218.00C.

Berger, Johann; and Berger, Josef. Woven belting with tubular edge portions. 4,148,957, Cl. 428-193.000.

Berger, Josef: *See*—
Berger, Johann; and Berger, Josef, 4,148,957, Cl. 428-193.000.

Berghof, Winfried; Pichler, Alfred; and Raeth, Rainer, to Siemens Aktiengesellschaft. Magnetic head and process for making laminated magnetic head. 4,149,205, Cl. 360-123.000.

Beriev, Georgy M.: *See*—
Korjukin, Alexandr V.; Vesnitskaya, Galina S.; Gerasimova, Elena M.; Gudimov, Matvei M.; Markina, Emma F.; Klitsov, Alexandr A.; Kovtun, Alexandr T.; Beriev, Georgy M.; and Vasilchenko, Viktor L., 4,148,939, Cl. 427-164.000.

Bernoco, Domenico; Mottu, Andre; and Waltz, Lothar, to Hoffmann-La Roche Inc. Apparatus and analysis for agglutination reaction. 4,148,607, Cl. 23-230.00B.

Bersin, Richard L.: *See*—
Battey, James F.; Bersin, Richard L.; Reichelderfer, Richard F.; and Welty, Joseph M., 4,148,705, Cl. 204-192.00E.

Beschke, Helmut; and Friedrich, Heinz, to Deutsche Gold- und Silber Scheideanstalt vormals Roessler. Process for the production of 2-methyl pyridine and 3-methyl pyridine. 4,149,002, Cl. 546-251.000.

Besserer, Walter: *See*—
Baumann, Manfred; and Besserer, Walter, 4,148,442, Cl. 242-55.300.

Bessho, Michio, to Kawasaki Yukoh Kabushiki Kaisha. Forging press. 4,148,209, Cl. 72-441.000.

Bessin, Pierre, to Societe Anonyme Dite Albert Rolland S.A. Method of treating respiratory disorders. 4,148,911, Cl. 424-285.000.

Bessin, Pierre A. R.: *See*—
Thuillier, Germaine; Mignonac, Sylviane S. J.; and Bessin, Pierre A. R., 4,148,915, Cl. 424-308.000.

Bethlehem Steel Corporation: *See*—
Chu, Vincent H. K.; Benedict, Louis G.; and Fox, Sidney V., 4,148,692, Cl. 201-36.000.

BFG Glassgroup: *See*—
Jelli, Andre, 4,148,965, Cl. 428-410.000.

BICC Limited: *See*—
Margolis, David S., 4,148,560, Cl. 350-96.230.

Biddlecom, William G.: *See*—
Woessner, Warren D.; Sih, Charles J.; Kluender, Harold C.; Arndt, Henry C.; and Biddlecom, William G., 4,149,017, Cl. 568-665.000.

Binek, Paul H.: *See*—
Smith, Robert T.; and Binek, Paul H., 4,149,072, Cl. 250-199.000.

Bird, Forrest M., to Minnesota Mining and Manufacturing Company. Combination anesthesia and intensive care apparatus. 4,148,312, Cl. 128-145.600.

Bird, Forrest M.; and Martin, Larry S., to Minnesota Mining and Manufacturing Company. Patient breathing monitoring apparatus and method. 4,148,313, Cl. 128-145.800.

Bishel, Robert A., to International Nickel Company, Inc., The. Flux cored wire for welding Ni-Cr-Fe alloys. 4,149,063, Cl. 219-146.230.

Bishop, Richard L.: *See*—
Anderson, David L.; and Bishop, Richard L., 4,149,244, Cl. 364-200.000.

Bissinger, Norbert: *See*—
Winterling, Gerhard; and Bissinger, Norbert, 4,149,118, Cl. 318-640.000.

Bjork, Bengt A., to AB Nike Hydraulik. Self-tightening pull clamp for attaching to sheet metal flanges and the like. 4,148,210, Cl. 72-457.000.

Bjorksten Research Laboratories, Inc.: *See*—
Paquette, Elmer G.; and Guenther, Karl R., 4,148,676, Cl. 156-181.000.

Black, Dolphus H., to United States of America, National Aeronautics and Space Administration. Horizontally mounted solar collector. 4,148,295, Cl. 126-270.000.

Black, Paul G.: *See*—
Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark, John S., 4,148,246, Cl. 90-11.00D.

Blackwell, Samuel E.; and Barton, Kenneth R., to Eastman Kodak Company. Water-dispersible dye/resin compositions. 4,148,779, Cl. 260-40.00R.

Blair, Robert W.: *See*—
Mayer, Peter; Blair, Robert W.; and Zamin, Mohammed, 4,148,699, Cl. 204-129.850.
Mayer, Peter; Blair, Robert W.; and Zamin, Mohammed, 4,148,707, Cl. 204-297.00W.

Blanke, John D.: *See*—
Sawa, Kenneth B.; Peek, Willis M.; and Blanke, John D., 4,148,211, Cl. 73-23.000.

Blasucci, Leonard. Window alarm employing a releasably mounted plunger switch. 4,149,156, Cl. 340-545.000.

Blessum, Norman S.: *See*—
Behr, Michael I.; Blessum, Norman S.; and Iwan, Wilfred D., 4,149,198, Cl. 360-77.000.

Bludworth, Robert A. Coupling apparatus for articulated bodies. 4,148,270, Cl. 114-248.000.

Blumel, Harald; and zur Nedden, Klaus, to Chemische Werke Huels Aktiengesellschaft. Thermoplastic materials. 4,148,780, Cl. 260-42.460.

Blumenfeld, Georg: *See*—
Petersen, Egon N.; Vollkommer, Norbert; Blumenfeld, Georg; Richtzenhain, Hermann; and Vogt, Wilhelm, 4,149,008, Cl. 560-221.000.

BMD Development Trust: *See*—
Mull, Leland G., 4,148,304, Cl. 128-2.00R.

Bochkov, Alexandr S.: *See*—
Berezkin, Viktor G.; Bochkov, Alexandr S.; Brazhnikov, Vadim V.; Artamonov, Alexei A.; and Balasanov, Leonid G., 4,148,315, Cl. 128-218.00C.

Bodenbenner, Kurt: *See*—
von Plessen, Helmold; and Bodenbenner, Kurt, 4,148,858, Cl. 422-12.000.

Boehringer Mannheim GmbH: *See*—
Muhlegger, Klaus; Weimann, Gunter; and Nelboeck-Hochstetter, Michael, 4,148,994, Cl. 536-28.000.

Boeing Company, The: *See*—
Erdmann, Joachim C.; Gellert, Robert I.; and Skaugset, Richard L., 4,148,587, Cl. 356-356.000.

Boettger, Erhard: *See*—
Jager, Wolfgang, 4,149,067, Cl. 219-523.000.

Bogaczynski, Kazimierz: *See*—
Kozlowska, Halina; Zadernowski, Ryszard; Chodkowska-Lossow, Bozena; Bogaczynski, Kazimierz; and Szebiotko, Kazimierz, 4,148,789, Cl. 260-123.500.

Bolin, Donald E., to Scott & Fetzer Company, The. Rotational line switch control. 4,149,046, Cl. 200-38.00A.

Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,148,176, Cl. 56-370.000.

Boots Company Limited, The: *See*—
Brookes, Robert F.; Godson, David H.; Greenwood, Douglas; Tulley, Margaret; and Wakerley, Stanley B., 4,148,626, Cl. 71-92.000.

Borger, Waldemar: *See*—
Winsel, August; Voss, Ernst; Dennstedt, Welf; and Borger, Waldemar, 4,148,978, Cl. 429-217.000.

Bould, Fred: *See*—
Milianowicz, Stanislaw A.; and Bould, Fred, 4,149,051, Cl. 200-148.00A.

Bourrain, Paul; and Giroud, Pierre, to Rhone-Poulenc-Textile. Adhesive-coating composition for organic or mineral filaments. 4,148,963, Cl. 428-392.000.

Bouve, Thomas T. Surface game target apparatus. 4,148,487, Cl. 273-127.00B.

Bower, Robert W., to TRW Inc. Method of fabricating a two-phase charge coupled device. 4,148,132, Cl. 29-571.000.

Bowman, Donald W. Portable winch stand. 4,148,465, Cl. 254-186.0HC.

Bowser, George C.: *See*—
Schneider, Alan A.; Bowser, George C.; and Foxwell, Lurman H., 4,148,975, Cl. 429-174.000.

Boykin, John D. Pierced earring with liquid visible therein. 4,148,199, Cl. 63-12.000.

Boysen, Richard L. Reverse bending tool. 4,148,205, Cl. 72-176.000.

Bozarth, Theodore B.; and Zielinski, Martin, to Honeywell Inc. Multi-input signal comparator and indicator circuit. 4,149,160, Cl. 340-661.000.

Brack, Arnold S.: *See*—
Brack, Patrick; and Brack, Arnold S., 4,148,510, Cl. 294-1.00R.

Brack, Patrick; and Brack, Arnold S., to Brack, Patrick. Hand operable scoop for the collection and disposal of animal excrement. 4,148,510, Cl. 294-1.00R.

Bracke, Pieter; Forker, Dieter; and Kropsch, Dieter, to International Standard Electric Corporation. Electron bun optical adjustment apparatus and method. 4,148,117, Cl. 29-25.160.

Bradbury, Bernard G., to Rexnord Inc. Conveyor roller mounting device with curved surfaces. 4,148,386, Cl. 193-37.000.

Brand, Peter; Haefner, Guenther; Diedrich, Fritz; and Kirchmann, Hans, to Dreyer, Heinrich Wilhelm. Folding adjustable work stool. 4,148,523, Cl. 297-55.000.

Brandes, Siegfried, to Hochtemperatur-Reaktorbau GmbH. Process and apparatus for shutdown and control of a gas-cooled nuclear reactor. 4,148,685, Cl. 176-36.00R.

Brantly, Robert T. Projector stacking stand. 4,148,453, Cl. 248-660.000.

Brass and Woodwind Shop, Inc.: *See*—
Woehr, Theodore P.; Kresic, Richard K.; and Sheppard, James S., 4,148,242, Cl. 84-385.00R.

Braun, Robert J.: *See*—
Lamont, James; and Braun, Robert J., 4,148,764, Cl. 260-22.00D.

Braunschweiger Flammenfilter Leinemann & Co.: *See*—
Leinemann, Hubert, 4,148,336, Cl. 137-491.000.

Brazdil, James F.; Suresh, Dev D.; and Grasselli, Robert K., to Standard Oil Company, The. Process for forming multi-component oxide complex catalysts. 4,148,757, Cl. 252-432.000.

Brazhnikov, Vadim V.: *See*—
Berezkin, Viktor G.; Bochkov, Alexandr S.; Brazhnikov, Vadim V.; Artamonov, Alexei A.; and Balasanov, Leonid G., 4,148,315, Cl. 128-218.00C.

Breininger, J. Shannon; and Greenberg, Charles B., to PPG Industries, Inc. Method for depositing films containing cobalt oxide. 4,148,940, Cl. 427-226.000.

Breitenfellner, Franz; and Fink, Roland, to Alkor GmbH; and Ciba-Geigy AG. Matt and scratch-resistant films and process for their manufacture. 4,148,955, Cl. 428-143.000.

Breitenfellner, Franz; and Fink, Roland, to Alkor GmbH; and Ciba-Geigy AG. Thermoplastic moulding composition and its use and sheets made from the moulding composition. 4,148,956, Cl. 428-156.000.

Brekell, Helge, to AB Svenska Flaktfabriken. Conveyor for lamellar material. 4,148,476, Cl. 271-194.000.

Bretschneider, Edward S.: *See*—
Rubino, Andrew M.; Jones, John L.; and Bretschneider, Edward S., 4,148,812, Cl. 260-429.300.

Brigante, Miguel F. Multi-stage apparatus for the separation of finely divided solids from liquids. 4,148,731, Cl. 210-223.000.

Briggs, Charles B.: *See*—
Morrissette, Alfred B.; Nusbaum, Donald W.; and Briggs, Charles B., 4,148,420, Cl. 222-494.000.

Brindell, Gordon D.; and Fraccica, Richard A., to Ameron, Inc. Epoxy surfacer cements containing polyamine-ketimine mixtures. 4,148,950, Cl. 427-421.000.

British-American Tobacco Company Limited: *See*—
Solomon, Graeme R.; and Churcher, Eric J., 4,148,325, Cl. 131-134.000.

British Petroleum Company Limited, The: *See*—
Barker, Michael H.; and Roberts, Alan G., 4,148,437, Cl. 239-424.000.

British Steel Corporation: *See*—
Croft, Edward F. B.; and Lane, John J., 4,148,600, Cl. 432-8.000.

Brookes, Robert F.; Godson, David H.; Greenwood, Douglas; Tulley, Margaret; and Wakerley, Stanley B., to Boots Company Limited, The. Herbicidal agents. 4,148,626, Cl. 71-92.000.

Brooks, Thomas L.: *See*—
Engle, William L.; Zuverink, Charles E.; Vander Kolk, Richard A.; Brooks, Thomas L.; and Weaver, Cecil L., 4,148,277, Cl. 119-20.000.

Brown, David L.; Ostborg, John; and Wambsgans, Robert O., to Bauer Bros. Co., The. Centrifugal cleaner apparatus and canister type arrangements thereof. 4,148,721, Cl. 209-211.000.

Brown, James M., Jr.: *See*—
Critchell, Kenneth G.; and Brown, James M., Jr., 4,148,344, Cl. 144-3.00R.

Brown, Maurice H. Terminal forming and installing apparatus. 4,148,237, Cl. 83-78.000.

Brown, Omar L., to Fraze, Ermal C. Tab for easy-open ecology end. 4,148,410, Cl. 220-269.000.

Brown, Richard E.; Unangst, Paul C.; Fontsere, Frank; and Fabian, Arthur C., to Warner-Lambert Company. Process for the preparation of indolopyrones. 4,148,806, Cl. 260-326.290.

Brown & Williamson Tobacco Corp.: *See*—
Pettinato, F. Edward; Herman, Maynard A.; and Koczak, Steven, 4,148,925, Cl. 426-235.000.

Bruck, Rolf: *See*—
Morcher, Bernhard; and Bruck, Rolf, 4,148,943, Cl. 427-256.000.

Bryson, Jay G., to Goodyear Tire & Rubber Company, The. Reclaim oil for digester process for rubber reclaiming. 4,148,763, Cl. 260-2.300.

BTGCO: *See*—
Steffanus, Robert D.; and Anderson, David R., 4,148,245, Cl. 89-7.000.

Bubb, Wayne A., to Eastman Kodak Company. Instant processing film unit having internal dark slide. 4,148,651, Cl. 96-76.00C.

Buchheit, Robert F., to Xerox Corporation. Combined AC-DC electrometer with AC feedback for drift compensation. 4,149,119, Cl. 324-32.000.

Buckler, Robert T.; and Garling, David L., to Miles Laboratories, Inc. C_{14} Phenyl-substituted derivatives of prostaglandin analogues. 4,149,007, Cl. 560-53.000.

Buckley, Janette A.: *See*—
French, John B.; Reid, Neil M.; and Buckley, Janette A., 4,148,196, Cl. 62-55.500.

Budd Company, The: *See*—
Eggert, Walter S., Jr., 4,149,221, Cl. 362-73.000.

Buhle, Klaus: *See*—
Winter, Friedhelm; Buhle, Klaus; and Eifer, Ralf, 4,149,048, Cl. 200-61.540.

Bujese, David P., to Pitney-Bowes Inc. Reciprocating carriage drive system. 4,148,578, Cl. 355-8.000.

Bukosky, Allen A.; and Monroe, Paul P., to Bunker Ramo Corporation. Capacitance-to-voltage transformation circuit. 4,149,231, Cl. 363-59.000.

Bundy, Gordon L., to Upjohn Company, The. 2-Decarboxy-2-alkylcarbonyl-11-deoxy-PGF compounds. 4,148,825, Cl. 260-586.00R.

Bundy, Gordon L., to Upjohn Company, The. 2-Decarboxy-2-alkylcarbonyl PGD compounds. 4,148,827, Cl. 260-590.00C.

Bundy, Gordon L., to Upjohn Company, The. 2-Decarboxy-2-alkylcarbonyl-3,7-inter-m-phenylene-3-oxa-4,5,6-trinor-PGA or PGB compounds. 4,148,828, Cl. 260-590.00C.

Bunker Ramo Corporation: *See*—
Bukosky, Allen A.; and Monroe, Paul P., 4,149,231, Cl. 363-59.000.
Otsuki, Tomonari; Yamada, Akio; Igarashi, Yoshiaki; and Inouye, Hiromasa, 4,148,547, Cl. 339-258.00R.

Burdick, Kenneth J.; Hand, Wilfred L.; Klein, Arthur H.; and Neal, Charles B., to GTE Sylvania Incorporated. Signal-dependent chrominance subcarrier filtering circuit. 4,149,181, Cl. 358-31.000.

Burger, Alex; Guth, Hans; Ludovici, Werner; and Rohe, Hermann, to Bayer Aktiengesellschaft. Production of activated carbon in a reactor having a lower static layer and an upper fluidized layer. 4,148,752, Cl. 252-421.000.

Burk, George A.: *See*—
Mixan, Craig E.; and Burk, George A., 4,148,899, Cl. 424-263.000.

Burkholder, Theodore B.: *See*—
Stalter, Robert J.; and Burkholder, Theodore B., 4,148,855, Cl. 264-54.000.

Burr, Richard R.; Gabrielson, Lyle G.; and Masten, Richard R., Jr., to Menasha Corporation. Receptacle with self-locking closure. 4,148,429, Cl. 229-36.000.

Burroughs Corporation: *See*—
Behr, Michael I.; Blessum, Norman S.; and Iwan, Wilfred D., 4,149,198, Cl. 360-77.000.
Card, Daniel C., 4,149,200, Cl. 360-77.000.
Card, Daniel C., 4,149,201, Cl. 360-77.000.
Quadri, Farooq M., 4,149,267, Cl. 365-12.000.

Burroughs Wellcome Co.: *See*—
Almeida, June D.; and Edwards, David C., 4,148,876, Cl. 424-89.000.

Burrow, Clovis E.; and Burrow, Flois D. Bacteria filter unit. 4,148,732, Cl. 210-232.000.

Burrow, Flois D.: *See*—
Burrow, Clovis E.; and Burrow, Flois D., 4,148,732, Cl. 210-232.000.

Burton, Robert S., III, to Occidental Oil Shale, Inc. Doping a retort to determine the locus of a processing zone. 4,148,529, Cl. 299-1.000.

Burton, Robert S., III, to Occidental Oil Shale, Inc. Fluidized bed process for retorting oil shale. 4,148,710, Cl. 208-11.00R.

Bustos, Rafael T.; Taylor, William B.; Davis, Charles L.; and Kern, Lawrence G., to Coca-Cola Company, The. Display rack for packaged and dispensable beverages. 4,148,533, Cl. 312-223.000.

Butter, Karl; Lechner, Manfred; and Stich, Kurt, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Method and apparatus for manufacturing rotationally symmetrical constructional parts such as nozzles and combination chambers of rocket engines. 4,148,121, Cl. 29-157.00C.

Buttner-Schilde-Haas AG: *See*—
Winters, Heinrich, 4,148,616, Cl. 55-226.000.

Byrd, Fred; and Fisher, James A., to Armco Steel Corporation. Method for maintaining a non-oxidizing atmosphere at positive pressure

within the metallic strip preparation furnace of a metallic coating line during line stops. 4,148,946, Cl. 427-319.000.
C. A. Weidmuller KG: *See—*
Strich, Werner, 4,149,215, Cl. 361-331.000.
C. van der Lely N.V.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,148,176, Cl. 56-370.000.
Cabala, Kenneth M.: *See—*
Miller, Theodore E., Jr.; and Cabala, Kenneth M., 4,148,610, Cl. 23-230.00A.
Cabrera, Pedro P.: *See—*
Simpson, Ronald O.; and Cabrera, Pedro P., 4,148,859, Cl. 422-103.000.
Calderara, Reto, to Kistler Instrumente AG. Cut angles for piezoelectric quartz crystal elements. 4,148,530, Cl. 310-361.000.
Calgon Corporation: *See—*
Sinkovitz, Gloria D.; and Dixon, Kenneth W., 4,148,639, Cl. 96-1.50R.
Campbell, Carl C., Jr. Apparatus adapted for multipurpose use such as a tree stand, backpack frame or the like. 4,148,376, Cl. 182-20.000.
Campbell, Donn V.; and Arnold, James J., deceased (by Arnold, Susan, executrix), to United States of America, Army. Multiport cable choke. 4,149,170, Cl. 343-885.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Fydelor, Peter J., 4,148,839, Cl. 260-857.00G.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defense: *See—*
Ratte, Jacques; Duchesne, Gonzague; and Carignan, Pierre, 4,148,675, Cl. 156-91.000.
Canadair Limited: *See—*
Knap, Joseph, 4,148,515, Cl. 296-187.000.
Canadian General Electric Company Limited: *See—*
Flemons, Ralph S., 4,149,213, Cl. 361-191.000.
Canadian Patents and Development Limited: *See—*
Gupta, Vidya S., 4,148,889, Cl. 424-180.000.
Canella, Marco: *See—*
Sodini, Giancarlo; Canella, Marco; and Patricelli, Alberto, 4,148,928, Cl. 426-430.000.
Cann, Alfred J.: *See—*
Richmond, Martin R.; and Cann, Alfred J., 4,149,123, Cl. 328-168.000.
Canon Kabushiki Kaisha: *See—*
Harigaya, Isao; and Yamataka, Akihiro, 4,149,261, Cl. 364-745.000.
Ichiyanagi, Toshikazu, 4,148,570, Cl. 352-180.000.
Kurachi, Hisashi; Sakamoto, Yoshihiro; Tsuchiya, Kaichi; Yamakami, Hiroshi; Miyamae, Tatsuo; and Tomari, Seiji, 4,148,937, Cl. 427-194.000.
Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, 4,148,968, Cl. 428-454.000.
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, 4,148,567, Cl. 352-27.000.
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, 4,148,569, Cl. 352-140.000.
Cantoni, Giulio L.; Chiang, Peter K.; and Richards, Henry H., to United States of America, Health, Education and Welfare. 3-Deazaadenosine as an inhibitor of adenosylhomocysteine hydrolase with antiviral activity. 4,148,888, Cl. 424-180.000.
Caravias, Diomedes. Table having multiple table top elevations. 4,148,264, Cl. 108-145.000.
Card, Daniel C., to Burroughs Corporation. Transducer positioning system. 4,149,200, Cl. 360-77.000.
Card, Daniel C., to Burroughs Corporation. Transducer centering system. 4,149,201, Cl. 360-77.000.
Card, Stuart E.; and Griffiths, David F., to Post Office, The. Telephone apparatus. 4,149,041, Cl. 179-27.0CA.
Carignan, Pierre: *See—*
Ratte, Jacques; Duchesne, Gonzague; and Carignan, Pierre, 4,148,675, Cl. 156-91.000.
Carl Freudenberg, Firma: *See—*
Tischer, Kurt; and Fottinger, Walter, 4,148,958, Cl. 428-196.000.
Carl Hurth Maschinen-und Zahnradfabrik: *See—*
Eichinger, Johann, 4,148,262, Cl. 105-131.000.
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Doria, Gianfederico; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, 4,148,900, Cl. 424-263.000.
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Carlsson, Jan P. E.; Axen, Rolf E. A. V.; Drevin, Hakan N. Y.; and Lindgren, Goran E. S., to Pharmacia Fine Chemicals AB. Pyridine disulfide compounds. 4,149,003, Cl. 546-261.000.
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Mulder, Jan L., deceased; and Carlsson, Lars A. I., 4,148,787, Cl. 260-112.50R.
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Carter, Jackie L.; and Carter, Jerry D. Bale handling apparatus. 4,148,399, Cl. 414-732.000.
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Carter, Jackie L.; and Carter, Jerry D., 4,148,399, Cl. 414-732.000.
Carvalko, Joseph R.: *See—*
Kasper, Richard F.; and Carvalko, Joseph R., 4,148,319, Cl. 128-349.00B.
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Petropoulsos, Nikolaostzakos J.; and Carvouniaris, George D., 4,148,536, Cl. 339-42.000.
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Battisti, Ruggero; Cassar, Luigi; and Mazzaferro, Nicola, 4,149,005, Cl. 548-362.000.
Catalyst Research Corporation: *See—*
Schneider, Alan A.; Bowser, George C.; and Foxwell, Lurman H., 4,148,975, Cl. 429-174.000.
Catanese, Carmen A.: *See—*
de Wolf, David A.; and Catanese, Carmen A., 4,149,106, Cl. 313-400.000.
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Morley, Roy D., 4,148,109, Cl. 15-345.000.
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Cerroni, Manlio. Method for separating urban waste materials. 4,148,719, Cl. 209-139.00R.
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Pitroda, Satyan G.; Min, Byung C.; and Chaddha, Tej N., 4,149,038, Cl. 179-15.0BF.
Chambers, Ramon P.: *See—*
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Champion International Corporation: *See—*
Lepisto, J. George, 4,148,431, Cl. 229-54.00R.
Chang, Ifay F., to International Business Machines Corporation. Multistable cathode ray type storage display device. 4,149,108, Cl. 315-8.500.
Channell, Glenn L. Scissor frame for a truck hoist. 4,148,528, Cl. 298-22.00J.
Chaparral Industries, Incorporated: *See—*
Moyski, John G.; and Mueller, Horst W., 4,148,478, Cl. 272-73.000.
Chapelet, Gilbert: *See—*
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Chapman, Derek D.; Friday, James A.; and Elwood, James K., to Eastman Kodak Company. Photographic products and processes employing nondiffusible 1-arylazo-4-isoquinolinol dye-releasing compounds. 4,148,642, Cl. 96-29.00D.
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Baker, Robert L., 4,148,427, Cl. 229-15.000.
Chemetron Corporation: *See—*
Linde, Harry T., 4,149,222, Cl. 362-130.000.
Chemie-Anlagenbau Bischofsheim GmbH: *See—*
Hilterhaus, Karl H.; and Reuter, Franz G., 4,148,734, Cl. 264-48.000.
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Chen, Nai Y.; and Reagan, William J., to Mobil Oil Corporation. Hydrocarbon manufacture from alcohols. 4,148,835, Cl. 260-682.000.
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Liston, Thomas V.; and Lowe, Warren, 4,148,737, Cl. 252-32.70E.
Liston, Thomas V.; and Lowe, Warren, 4,148,738, Cl. 252-32.70E.
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Wall, Robert G., 4,149,021, Cl. 568-864.000.
Chiang, Peter K.: *See—*
Cantoni, Giulio L.; Chiang, Peter K.; and Richards, Henry H., 4,148,888, Cl. 424-180.000.
Chichibu Cement Kabushiki Kaisha: *See—*
Kanda, Mamoru; Ishiwata, Shousuke; Horiguchi, Masaji; Udagawa, Teruo; and Mii, Seihei, 4,148,588, Cl. 366-56.000.
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Choay, Jean; and Sakouhi nee Cousin, Mireille, 4,148,877, Cl. 424-92.000.
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Kozlowska, Halina; Zadernowski, Ryszard; Chodkowska-Lossow, Bozena; Bogaczynski, Kazimierz; and Szebiotko, Kazimierz, 4,148,789, Cl. 260-123.500.
Christensen, Harold V., to Phillips Petroleum Company. Foam delivery system for a floating roof tank. 4,148,361, Cl. 169-66.000.
Christenson, David N.; Freeman, Frank A.; and Foley, Joseph T., to Smoketray, Inc. Ashtray. 4,148,618, Cl. 55-385.00G.
Christiansen, Bent E.: *See—*
Mortensen, Niels E.; Christiansen, Bent E.; and Kjaer, Ian, 4,148,238, Cl. 83-152.000.
Chrysler Corporation: *See—*
Crall, Frederick W.; and Tomczak, Lawrence W., 4,149,220, Cl. 361-395.000.
Chu, Simon L.: *See—*
Golda, Eugene; Wilkes, Alan L.; and Chu, Simon L., 4,148,649, Cl. 96-75.000.
Chu, Vincent H. K.; Benedict, Louis G.; and Fox, Sidney V., to Bethlehem Steel Corporation. Process for producing low reactivity calcined coke agglomerates. 4,148,692, Cl. 201-36.000.
Chung, David H.; and Haynes, Frederic S. Method and apparatus for applying a scanning control signal to a television receiver. 4,149,186, Cl. 358-83.000.
Church, Clyde L.: *See—*
Kochel, Leroy J.; Kalweit, Harvey W.; Gonzales, Arthur D.; Church, Clyde L.; and Ou-Yang, Paul H., 4,148,133, Cl. 29-571.000.
Churcher, Eric J.: *See—*
Solomon, Graeme R.; and Churcher, Eric J., 4,148,325, Cl. 131-134.000.
Ciba-Geigy AG: *See—*
Breitenfellner, Franz; and Fink, Roland, 4,148,955, Cl. 428-143.000.
Breitenfellner, Franz; and Fink, Roland, 4,148,956, Cl. 428-156.000.
Schwander, Hansrudolf; and Zickendraht, Christian, 4,148,805, Cl. 260-326.270.
Ciba-Geigy Corporation: *See—*
Evans, Samuel, 4,148,820, Cl. 260-463.000.
Fattinger, Volker, 4,148,868, Cl. 423-523.000.
Maier, Ludwig, 4,148,624, Cl. 71-86.000.
Malherbe, Roger; and Rasberger, Michael, 4,148,784, Cl. 260-45.80N.
Rasberger, Michael; Rody, Jean; and Gugumus, Francois, 4,148,783, Cl. 260-45.80N.
Cilag-Chemie A.G.: *See—*
Pluss, Kurt; and DeMartin, Bruno R., 4,148,797, Cl. 546-344.000.
Cincinnati Milacron-Heald Corp.: *See—*
Robillard, Edward G., 4,148,159, Cl. 51-165.880.
Citizen Watch Company Limited: *See—*
Ebihara, Heihachiro; and Sekiya, Fukuo, 4,149,146, Cl. 58-23.00R.
Murakami, Tomomi, 4,148,183, Cl. 58-23.00V.
Nakagiri, Tadahiko; Nezu, Matao; Oguchi, Toshiaki; Hatuse, Toshikazu; and Natori, Minoru, 4,149,257, Cl. 364-705.000.
Clapp, James W.: *See—*
Lies, Thomas A.; and Clapp, James W., 4,148,795, Cl. 546-189.000.
Clark, Calvin M., to Stanadyne, Inc. Hole saw assembly. 4,148,593, Cl. 408-204.000.
Clark Equipment Company: *See—*
Beckstrom, Harold K.; and Bauer, James J., 4,148,366, Cl. 173-28.000.
Redzinski, Gilbert E., 4,148,231, Cl. 74-866.000.
Clark, John F. Water recovery device. 4,148,617, Cl. 55-267.000.
Clark, John S.: *See—*
Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark, John S., 4,148,246, Cl. 90-11.00D.
Clark, William T., III. Image retention on topical thermograph. 4,148,951, Cl. 428-1.000.
Clean Energy Corporation: *See—*
Cramer, Frank B., 4,148,356, Cl. 165-111.000.
Cleare, Michael J.: *See—*
Hydes, Paul C.; and Cleare, Michael J., 4,148,870, Cl. 424-3.000.
Cline, Erving H. Fender support. 4,148,373, Cl. 280-154.50R.
Clovis, James S.: *See—*
Owens, Frederick H.; and Clovis, James S., 4,148,846, Cl. 260-885.000.
Cluff, C. Brent. Water-borne rotating solar collecting and storage systems. 4,148,301, Cl. 126-271.000.
Coates, William J., Jr., to Science Applications, Inc. Method and apparatus for modulating the perceptible intensity of a light emitting display. 4,149,111, Cl. 315-169.400.
Coca-Cola Company, The: *See—*
Bustos, Rafael T.; Taylor, William B.; Davis, Charles L.; and Kern, Lawrence G., 4,148,533, Cl. 312-223.000.
Coetzee, Dirk J. Device for protection against sexual assault. 4,148,310, Cl. 128-138.00R.
Cohen, Herbert, to Jamaica Consultants, Inc. Fabric package, fabric package core, and fabric packaging method. 4,148,441, Cl. 242-1.000.
Cohen, Leonard A. Method of assessing intentional muscular disability. 4,148,303, Cl. 128-2.00R.
Colgate-Palmolive Company: *See—*
Schubert, Warren R., 4,148,743, Cl. 252-132.000.
Collin, Gerd: *See—*
Alscher, Arnold; Steinke, Heinrich; Collin, Gerd; and Storch, Gunter, 4,149,019, Cl. 568-804.000.
Collins, Marcus H.; and Patel, Kiritkumar R., to Eaton Corporation. Expandable carrier apparatus for a tire building machine. 4,148,681, Cl. 156-405.00R.
Collins, Marcus H.; and Patel, Kiritkumar R., to Eaton Corporation. Fluid expandable tire building drum. 4,148,682, Cl. 156-416.000.
Collins, Paul W.; and Pappo, Raphael, to G. D. Searle & Co. Prostaglandin derivatives having alkynyl, hydroxy and aryloxy junctions in the 2 β side chain. 4,149,006, Cl. 560-53.000.
Collipp, Platon J., to Collipp, Platon J. Growth hormone inhibitors. 4,148,906, Cl. 424-273.00R.
Collu, Carlo: *See—*
Ligorati, Ferdinando; Invernizzi, Renzo; Collu, Carlo; and Fontanesi, Maurizio, 4,148,755, Cl. 252-429.00C.
Colosimo, Ernest: *See—*
Colosimo, Gabriel A.; and Colosimo, Ernest, 4,148,598, Cl. 425-464.000.
Colosimo, Gabriel A.; and Colosimo, Ernest. Extrusion die for sausage and the like. 4,148,598, Cl. 425-464.000.
Combustion Engineering, Inc.: *See—*
Barger, John J., 4,149,060, Cl. 219-73.000.
Kronk, Richard E., 4,149,139, Cl. 340-3.00R.
Commissariat a l'Energie Atomique: *See—*
Devin, Bernard; and Guillemot, Michel, 4,148,564, Cl. 350-292.000.
Compagnie Francaise de Raffinage: *See—*
Ab der Halden, Charles; Espeillac, Marcellin; and Szabo, Georges, 4,148,749, Cl. 252-415.000.
Compagnie Generale des Etablissements Michelin: *See—*
de Zarauz, Yves, 4,148,985, Cl. 526-177.000.
DeZarauz, Yves, 4,148,986, Cl. 526-177.000.
Compagnie Industrielle des Lasers: *See—*
Roelants, Jacques, 4,148,584, Cl. 356-5.000.
Companion Pty. Limited: *See—*
Barson, Leslie, 4,149,225, Cl. 362-186.000.
Compton, Leslie E., to Occidental Research Corporation. Oxidizing hydrocarbons, hydrogen, and carbon monoxide. 4,148,358, Cl. 166-256.000.
Connelly, Glen J.: *See—*
Florida, Roy; and Connelly, Glen J., 4,148,415, Cl. 222-76.000.
Container Corporation of America: *See—*
Gardner, Jeffrey M., 4,148,396, Cl. 206-521.000.
Gardner, Jeffrey M., 4,148,428, Cl. 229-15.000.
Conti, Franco, to Etablissement Viridis. Stereoisomers of 1-(1'benzyl-2'pyrryl)-2-di-sec.-butylaminoethanol and pharmaceutical compositions comprising same. 4,148,907, Cl. 424-274.000.
Continental Oil Company: *See—*
Kennedy, Carl D.; and Nicks, Gene E., 4,148,834, Cl. 260-671.00B.
Control Data Corporation: *See—*
James, James A.; and Pedersen, Derald A., 4,149,238, Cl. 364-200.000.
Cook, Alan F.; and Quinn, Ronald J., to Hoffmann-La Roche Inc. Process to produce 1-methyl isoguanosine. 4,148,993, Cl. 536-24.000.
Cooper, Duane H. Multichannel matrix logic and encoding systems. 4,149,031, Cl. 179-1.0GQ.
Cordts, Howard P.; and Grandlic, Eugene J., to Freeman Chemical Corporation. Matched die molding of fiber reinforced plastic articles. 4,148,854, Cl. 264-45.300.
Corning Glass Works: *See—*
Dorman, William H., 4,149,227, Cl. 362-297.000.
Gress, Robert W.; and Sands, Robert W., 4,148,856, Cl. 264-71.000.
Kerko, David J.; and Seward, Thomas P., III, 4,148,661, Cl. 106-54.000.
Knowles, Daniel H.; and Lock, William E., 4,148,218, Cl. 73-829.000.
Weetall, Howard H., 4,148,690, Cl. 195-115.000.
Corno, Maria L.: *See—*
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Cornwell, Alexander M., Jr., to Jackes-Evans Manufacturing Company. Ganged mail box apparatus. 4,148,432, Cl. 232-39.000.
Correia, Yves, to Produits Chimiques Pechiney-Saint-Gobain. Continuous process for the chlorination of 1,1,1,-trichloroethane or mixtures thereof. 4,148,832, Cl. 260-658.00R.
Costello, Matthew J.; De Luca, Albert M.; Saunders, Thomas K.; and McGuire, James F., to Graphic Sciences, Inc. Acoustic coupler assembly. 4,149,033, Cl. 179-1.00C.
Coulter Electronics, Inc.: *See—*
Fulwyler, Mack J., 4,148,718, Cl. 209-3.100.
Simpson, Ronald O.; and Cabrera, Pedro P., 4,148,859, Cl. 422-103.000.
Courty, Philippe: *See—*
Sugier, Andre; Courty, Philippe; Deschamps, Andre; and Gruhier, Henri, 4,148,760, Cl. 252-455.00R.

Craig, Joe A.: *See*—
Hanlon, Robert G.; Craig, Joe A.; and Bangs, Leigh B., 4,148,748, Cl. 252-408.000.

Craig, Kenneth K., to H. Koch & Sons Division, Gulf & Western Manufacturing Company. Belt adjuster box style. 4,148,224, Cl. 74-242.800.

Crall, Frederick W.; and Tomczak, Lawrence W., to Chrysler Corporation. Arrangement for mounting a transducer on a housing. 4,149,220, Cl. 361-395.000.

Cramer, Frank B., to Clean Energy Corporation. Steam generation with coal. 4,148,356, Cl. 165-111.000.

Crawford, Robert J., to Procter & Gamble Company, The. Halogenation process. 4,148,811, Cl. 260-408.000.

Crean, Peter A.; Lavallee, Pierre A.; and Agulnek, Martin A., to Xerox Corporation. Scanning apparatus. 4,149,091, Cl. 250-566.000.

Credelle, Thomas L.; Hannan, William J.; and Spong, Fred W., to RCA Corporation. Broadening the spatial frequency pass band of a thermoplastic layer. 4,148,636, Cl. 96-1.100.

Cricchi, James R.; and Ahlport, Boyce T., to Westinghouse Electric Corp.; and Northrop Corporation. Variable threshold device memory circuit having automatic refresh feature. 4,149,270, Cl. 365-222.000.

Critchell, Kenneth G.; and Brown, James M., Jr., to Pack River Company, The. Portable sawmill. 4,148,344, Cl. 144-3.00R.

Croft, Edward F. B.; and Lane, John J., to British Steel Corporation. Heat treatment furnace for metal strip. 4,148,600, Cl. 432-8.000.

Cronk, Bryon J.: *See*—
Magnusson, John M.; and Cronk, Bryon J., 4,148,554, Cl. 350-96.210.

Cros, Pierre, to Spie-Batignolles; and Societe Generale de Techniques et d'Etudes. System for converting the randomly variable energy of a natural fluid. 4,149,092, Cl. 290-54.000.

Cross Company, The: *See*—
Cross, Ralph E., 4,148,400, Cl. 414-750.000.

Cross, Peter E.: *See*—
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, 4,148,920, Cl. 424-319.000.

Cross, Ralph E., to Cross Company, The. Pallet locator and clamping assembly. 4,148,400, Cl. 414-750.000.

Crossley, Roger, to John Wyeth & Brother Limited. Anti-ulcer composition. 4,148,904, Cl. 424-270.000.

Crutchfield, Marvin M.; Langguth, Robert P.; and Mayer, James M., to Monsanto Company. Detergent composition containing alkali metal salts of imidobis sulfuric acid. 4,148,742, Cl. 252-102.000.

Cruz, Mamerto M., Jr., to Avicon, Inc. Preparation of fibrous collagen product having hemostatic and wound sealing properties. 4,148,664, Cl. 106-161.000.

Csikos, Rezso; Balogh, Andras; Herendi, Jozsef; and Gregor, Katalin, nee Balogh, to Magyar Asvanyolaj es Foldgaz Kiserleti Intezet. Laminated coating system for insulation. 4,148,959, Cl. 428-215.000.

Cubic Corporation: *See*—
Hose, Eddy, 4,149,168, Cl. 343-112.00D.

Cullen, Walter P.: *See*—
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Routien, John B.; Shibakawa, Riichiro; and Tone, Junsuke, 4,148,880, Cl. 424-119.000.
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,148,882, Cl. 424-122.000.
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Cummings, Troy A. Internal combustion electric power hybrid power plant. 4,148,192, Cl. 60-716.000.

Cutler-Hammer, Inc.: *See*—
Long, Eric L., 4,149,049, Cl. 200-67.00G.
Long, Eric L., 4,149,053, Cl. 200-157.000.
Parato, Vito J., 4,149,122, Cl. 325-363.000.
Piber, Earl T., 4,149,052, Cl. 200-153.0LA.

Cyclone International Incorporated: *See*—
Engle, William L.; Zuverink, Charles E.; Vander Kolk, Richard A.; Brooks, Thomas L.; and Weaver, Cecil L., 4,148,277, Cl. 119-20.000.

Czok, Rudolf; Meingassner, Josef G.; Mieth, Hubert; and Schutze, Eberhard, to Sandoz Ltd. Antibiotic compositions for treating coccidiosis. 4,148,890, Cl. 424-181.000.

Daicel Ltd.: *See*—
Shima, Keizo; Harada, Yuichi; and Ohya, Yoshinobu, 4,148,775, Cl. 260-30.80R.

Daikhovskaya, Evelina A.: *See*—
Lesokhin, Albert Z.; Semenov, Mikhail R.; and Daikhovskaya, Evelina A., 4,149,101, Cl. 310-214.000.

Daito Giken Kogyo Kabushiki Kaisha: *See*—
Kanda, Mamoru; Ishiwata, Shousuke; Horiguchi, Masaji; Udagawa, Teruo; and Mii, Seihei, 4,148,588, Cl. 366-56.000.

Dale Electronics, Inc.: *See*—
Veburg, John C., 4,148,534, Cl. 312-236.000.

Dale, Glenn H.: *See*—
Nielsen, Richard H.; McKay, Dwight L.; and Dale, Glenn H., 4,148,712, Cl. 208-78.000.
Nielsen, Richard H.; McKay, Dwight L.; and Dale, Glenn H., 4,148,714, Cl. 208-114.000.

D'Alessio, Frank P.; and Andrews, Warren, to U.S. Autotronics. Battery protection device. 4,149,093, Cl. 307-10.0BP.

Dallos, Andras, to Raytheon Company. Brightness controlled CRT. 4,149,110, Cl. 315-107.000.

Dalton, John, to Keystone Lighting Corp. Light fixture. 4,149,226, Cl. 362-216.000.

Damm, Robert C.: *See*—
Damm, Thomas A.; and Damm, Robert C., 4,148,343, Cl. 138-178.000.

Damm, Thomas A.; and Damm, Robert C., to Pyle Pattern & Maf. Co. Blow plate and blow tube assembly. 4,148,343, Cl. 138-178.000.

Dana Corporation: *See*—
Sink, William H., 4,148,385, Cl. 192-106.100.

Danello, Luigi: *See*—
Beretta, Paolo; and Danello, Luigi, 4,148,657, Cl. 96-100.00R.

Danilewicz, John C.: *See*—
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, 4,148,920, Cl. 424-319.000.

Danziger, Harry; Immel, Otto; Kaiser, Bernd-Ulrich; Rampart, Guido; and Schwarz, Hans-Helmut, to Bayer Aktiengesellschaft. Purification of caprolactam. 4,148,792, Cl. 260-239.30A.

Danziger, Harry; Deibele, Ludwig; and Kaiser, Bernd-Ulrich, to Bayer Aktiengesellschaft. Process for the purification of epsilon-caprolactam. 4,148,793, Cl. 260-239.30A.

Daravingas, George V.: *See*—
Wagenknecht, Austin C., deceased; Daravingas, George V.; and Koski, William E., 4,148,872, Cl. 424-48.000.

Dashew, Stephen S., to La Mesa Industries, Inc. Method and apparatus for progressive molding of buildings. 4,148,852, Cl. 264-33.000.

Data Recording Instrument Company Ltd.: *See*—
Chick, David M.; and Sinden, Kenneth H., 4,149,199, Cl. 360-77.000.

Datwyler, Fritz; and Huber, Ernst, to Cerberus AG. Fire detection system. 4,149,159, Cl. 340-587.000.

Davies, Glyndwr J., to Glacier Metal Company Limited, The. Polyarylene sulphide coated backing. 4,148,966, Cl. 428-411.000.

Davis, Charles L.: *See*—
Bustos, Rafael T.; Taylor, William B.; Davis, Charles L.; and Kern, Lawrence G., 4,148,533, Cl. 312-223.000.

Davis, Donald E.; Weber, Edward V.; Williams, Maurice C.; and Woodard, Ollie C., to International Business Machines Corporation. Automatic overlay measurements using an electronic beam system as a measurement tool. 4,149,085, Cl. 250-492.00A.

Day, William A.; and Lavagnino, Edward R., to Eli Lilly and Company. Process for preparing dl-cis-1-hydroxy-3-substituted-6,6-dimethyl-6,6a,7,8,10,10a-hexahydro-9H-dibenzo[b,d]pyran-9-ones. 4,148,809, Cl. 260-345.300.

Dean, David B.: *See*—
Eddleman, William L., 4,148,700, Cl. 204-130.000.

Deaton, Carlton D., to Baxter Travenol Laboratories, Inc. Immunological reagent and method of using same. 4,148,869, Cl. 424-1.000.

DEC International, Inc.: *See*—
Gehring, Kenneth C., 4,148,355, Cl. 165-39.000.

Decor Design Corporation: *See*—
Sammis, John C., 4,149,113, Cl. 315-219.000.

DeCristofaro, Nicholas J.: *See*—
Sexton, Peter; and DeCristofaro, Nicholas J., 4,148,973, Cl. 428-680.000.

Dedinas, Jonas, to Eastman Kodak Company. Substituted benzopinacols. 4,149,015, Cl. 568-637.000.

Deere & Company: *See*—
Bennett, Michael V.; and Sorlie, Donald T., 4,148,267, Cl. 111-85.000.

Defibrator Aktiebolag: *See*—
Floden, Mats, 4,148,439, Cl. 241-28.000.

DeHoff, Harold P., to Monarch Molding. Line surge protection device for telephone system. 4,149,211, Cl. 361-119.000.

Deibele, Ludwig: *See*—
Danziger, Harry; Deibele, Ludwig; and Kaiser, Bernd-Ulrich, 4,148,793, Cl. 260-239.30A.

Delta Oil Products Corporation: *See*—
LaBar, Russell A.; and Kopac, Jordan J., 4,148,777, Cl. 260-37.00N.

De Luca, Albert M.: *See*—
Costello, Matthew J.; De Luca, Albert M.; Saunders, Thomas K.; and McGuire, James F., 4,149,033, Cl. 179-1.00C.

DEMAG Aktiengesellschaft: *See*—
Michel, Rolf; and Mosiener, Jorn, 4,148,387, Cl. 193-39.000.

DeMartin, Bruno R.: *See*—
Pluss, Kurt; and DeMartin, Bruno R., 4,148,797, Cl. 546-344.000.

de Meulemeester, Jean-Claude, to FMC Corporation. Relief valve improvement. 4,148,335, Cl. 137-484.800.

Dennis, Jack B.: *See*—
Misunas, David P.; and Dennis, Jack B., 4,149,240, Cl. 364-200.000.

Dennstedt, Welf: *See*—
Winsel, August; Voss, Ernst; Dennstedt, Welf; and Borger, Waldemar, 4,148,978, Cl. 429-217.000.

Dentsply Research & Development Corp.: *See*—
McCandless, William; Leu, Robert F.; Kroder, Ernest A.; and Tomecek, Charles J., 4,148,161, Cl. 51-215.0CP.

DePauw, Richard A.: *See*—
McMillen, Richard E.; Francis, Robert L.; and DePauw, Richard A., 4,148,323, Cl. 130-27.00T.

Deryagin, Boris V.: *See*—
Fedoseev, Dmitry V.; Deryagin, Boris V.; Bakul, Valentin N.; Prikhna, Alexei I.; Gerasimenko, Valentin K.; Poltoratsky, Vladimir G.; Nikitin, Jury I.; Vnukov, Stanislav P.; and Varnin, Valentin P., 4,148,964, Cl. 428-403.000.

DeRyke, Thomas V.; Fedesna, Kenneth J.; and Elms, Ronald D., to Addressograph-Multigraph Corporation. Programmable microfiche duplicator and sorter apparatus. 4,148,582, Cl. 355-97.000.

Deschamps, Andre: *See—*
Sugier, Andre; Courty, Philippe; Deschamps, Andre; and Gruhier, Henri, 4,148,760, Cl. 252-455.00R.

Deters, Owen J.: *See—*
Bargeron, C. Brent; and Deters, Owen J., 4,148,585, Cl. 356-28.500.

Deutsch, Daniel H. Flask and mechanical aerator. 4,148,619, Cl. 55-385.00R.

Deutsche Gold- und Silber Scheideanstalt vormals Roessler: *See—*
Beschke, Helmut; and Friedrich, Heinz, 4,149,002, Cl. 546-251.000.

Devin, Bernard; and Guillemot, Michel, to Commissariat a l'Energie Atomique. Solar sensor with linear concentration with a fixed receiver and movable mirrors. 4,148,564, Cl. 350-292.000.

de Wolf, David A.; and Catanese, Carmen A., to RCA Corporation. Electron multiplier output electron optics. 4,149,106, Cl. 313-400.000.

Dextec Metallurgical Proprietary Limited: *See—*
Everett, Peter K., 4,148,698, Cl. 204-118.000.

de Zarauz, Yves, to Compagnie Generale des Etablissements Michelin. Polymerization process. 4,148,985, Cl. 526-177.000.

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Dheer, Surendra K.; and McGregor, William H., to American Home Products Corporation. Analgesic polypeptide. 4,148,785, Cl. 260-112.50R.

Diamond, John N. Jig assembly and method for the manufacture of prefabricated roofing panels. 4,148,168, Cl. 52-748.000.

Diamond Shamrock Corporation: *See—*
McIntosh, George A.; and Smith, Russell, 4,148,970, Cl. 428-469.000.

Dickey-john Corporation: *See—*
Fathauer, George H., 4,149,163, Cl. 340-684.000.

Die Wacker-Chemie GmbH: *See—*
Frey, Volker; Muller, Horst; and Riedle, Rudolf, 4,148,818, Cl. 260-448.20E.

Diederich, Gerd: *See—*
Holter, Karl; Schrewe, Hans; Diederich, Gerd; and Pleschiutschnigg, Fritz P., 4,148,145, Cl. 33-143.00L.

Diedrich, Fritz: *See—*
Brand, Peter; Haefner, Guenther; Diedrich, Fritz; and Kirchmann, Hans, 4,148,523, Cl. 297-55.000.

Diefenderfer, Charles G., to Honeywell Inc. Polling and data communication system having a pulse position to binary address conversion circuit. 4,149,144, Cl. 340-147.00R.

Diehl, Karl-Heinz: *See—*
Eggensperger, Heinz; and Diehl, Karl-Heinz, 4,148,905, Cl. 424-272.000.

Dietrich, Gunther: *See—*
Scherber, Werner; and Dietrich, Gunther, 4,148,294, Cl. 126-270.000.

Dietrich, Oelschlagel: *See—*
Kawano, Hideo; Dietrich, Oelschlagel; Nakata, Katumi; and Yamaji, Kenkichi, 4,148,971, Cl. 428-558.000.

Dietze, Wolfgang: *See—*
Reuschel, Konrad; Dietze, Wolfgang; and Rucha, Ulrich, 4,148,931, Cl. 427-8.000.

Digital Equipment Corporation: *See—*
Jenkins, Stephen R.; Northrup, Thomas A.; and Stewart, Robert E., 4,149,239, Cl. 364-200.000.

Digonsky, Viktor V.: *See—*
Farafontov, Vladimir I.; Sokhor, Mirra I.; Kushkova, Natalia G.; Digonsky, Viktor V.; and Lysanov, Vladislav S., 4,148,863, Cl. 423-290.000.

Dionex Corporation: *See—*
Battey, James F.; Bersin, Richard L.; Reichelderfer, Richard F.; and Welty, Joseph M., 4,148,705, Cl. 204-192.00E.

Disinski, Francis J., to Abbott Laboratories. Method and apparatus for measuring the temperature of a glass container. 4,148,223, Cl. 73-359.00R.

Display Originals, Inc.: *See—*
Immordino, Vincent J., 4,148,413, Cl. 221-92.000.

Dixon Automatic Tool, Inc.: *See—*
Dixon, Paul H., 4,148,389, Cl. 198-389.000.

Dixon, Kenneth W.: *See—*
Sinkovitz, Gloria D.; and Dixon, Kenneth W., 4,148,639, Cl. 96-1.50R.

Dixon, Paul H., to Dixon Automatic Tool, Inc. Apparatus for feeding and orienting screws. 4,148,389, Cl. 198-389.000.

Do, Mau T.; Saffar, Serge H. A.; and Meimoun, Daniel S. Apparatus for determining the viscous behavior of a liquid during coagulation thereof. 4,148,216, Cl. 73-59.000.

Dr. Ing. Hans Muller: *See—*
Sotirianos, Konstantin, 4,148,590, Cl. 366-288.000.

Dr. Ing. Rudolf Hell GmbH: *See—*
Gast, Uwe, 4,149,195, Cl. 358-283.000.

Dolak, Lester A.: *See—*
Sebek, Oldrich K.; and Dolak, Lester A., 4,148,992, Cl. 536-13.000.

Dolling, Ulf-H.; Grabowski, Edward J. J.; Schoenewaldt, Erwin F.; and Sletzinger, Meyer, to Merck & Co., Inc. Synthesis of racemic 3-fluoro-alanine and its salts. 4,149,012, Cl. 562-574.000.

Dominion Bridge Company, Limited: *See—*
Epps, Harold R., 4,148,351, Cl. 164-150.000.

Donnelly, Charles W., Sr.: *See—*
Stauffer, Larry R.; Stape, William J.; and Donnelly, Charles W., Sr., 4,148,130, Cl. 29-566.300.

Dorfman, Edwin: *See—*
Schwartz, Willis T., Jr.; Dorfman, Edwin; and Hindersinn, Raymond R., 4,148,841, Cl. 260-862.000.

Doria, Gianfederico; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, to Carlo Erba S.p.A. 5:6-Benzo-γ-pyrone derivatives and process for their preparation. 4,148,900, Cl. 424-263.000.

Dorman, William H., to Corning Glass Works. Reflector. 4,149,227, Cl. 362-297.000.

Dornheim, Hans P.: *See—*
Hahn, Alfred; and Dornheim, Hans P., 4,149,078, Cl. 250-439.00R.

Dornier System GmbH: *See—*
Scherber, Werner; and Dietrich, Gunther, 4,148,294, Cl. 126-270.000.

Dotzer, Richard; and Stoger, Klaus, to Siemens Aktiengesellschaft. Process of mechanically shaping metal articles. 4,148,204, Cl. 72-39.000.

Dow Chemical Company, The: *See—*
Bangs, Leigh B.; Tuttle, Carole K.; and Evani, Syamalarao, 4,148,945, Cl. 427-304.000.
Hanlon, Robert G.; Craig, Joe A.; and Bangs, Leigh B., 4,148,748, Cl. 252-408.000.
Miller, Theodore E., Jr.; and Cabala, Kenneth M., 4,148,610, Cl. 23-230.00A.
Mixan, Craig E.; and Burk, George A., 4,148,899, Cl. 424-263.000.
Nelson, Donald L., 4,148,765, Cl. 260-22.0CB.
Rigterink, Raymond H., 4,148,902, Cl. 424-266.000.

Dowa Mining Co., Ltd.: *See—*
Kamata, Sachio; and Sekine, Kunio, 4,148,108, Cl. 15-77.000.

Dowdy, Edward J.: *See—*
Taylor, Gene W.; and Dowdy, Edward J., 4,148,612, Cl. 23-232.00R.

Dowler, Warren L.; Varsi, Giulio; and Yang, Lien C., to United States of America, National Aeronautics and Space Administration. Seismic vibration source. 4,148,375, Cl. 181-117.000.

Drake, Cyril F., to International Standard Electric Corporation. Controlled release fertilizer. 4,148,623, Cl. 71-32.000.

Drake, Terrance L., to Innovative Business Forms, Inc. Business form. 4,148,430, Cl. 229-69.000.

Draper, Geoffrey R., to Lucas Industries Limited. Lamp reflector with downwardly-facing step. 4,149,229, Cl. 362-349.000.

Dreis & Krump Mfg. Co.: *See—*
Farazandeh, Assadollah; and Everett, Buford R., 4,148,203, Cl. 72-21.000.

Drevin, Hakan N. Y.: *See—*
Carlsson, Jan P. E.; Axen, Rolf E. A. V.; Drevin, Hakan N. Y.; and Lindgren, Goran E. S., 4,149,003, Cl. 546-261.000.

Dreyer, Heinrich Wilhelm: *See—*
Brand, Peter; Haefner, Guenther; Diedrich, Fritz; and Kirchmann, Hans, 4,148,523, Cl. 297-55.000.

Drukier, Andrezej K.; Valette, Claude; and Waysand, Georges, to Agence Nationale de Valorisation de la Recherche (ANVAR). Methods and devices for detecting hard radiation. 4,149,075, Cl. 250-336.000.

Duble, Gerald R., to Gould Inc. Contactor having interlock for movable contact carrier. 4,149,047, Cl. 200-50.00A.

Dubois, David R., to Eastman Kodak Company. Process for preparing p-arylaminophenols with aluminum sulfate or carboxylate. 4,148,823, Cl. 260-571.000.

Duchesne, Gonzague: *See—*
Ratte, Jacques; Duchesne, Gonzague; and Carignan, Pierre, 4,148,675, Cl. 156-91.000.

Duin, Hendrik J.; van Dam, Antonius F.; and Rek, Johannes H. M., to Lever Brothers Company. Margarine. 4,148,930, Cl. 426-603.000.

Dulmage, William J.; and Fields, Alfred E., to Eastman Kodak Company. Developer compositions having electrically conducting filaments in carrier particle matrix. 4,148,640, Cl. 96-1.0SD.

Dumont, Claude: *See—*
Nedelec, Lucien; Pierdet, Andre; Dumont, Claude; and Kannengiesser, Marie-Helene, 4,148,919, Cl. 424-33.00D.

Dunham-Bush, Inc.: *See—*
Shaw, David N., 4,148,436, Cl. 237-2.00B.

Dunlop, Alfred N.; and Rickard, Christopher G., to SCM (Canada) Limited. Solid paints. 4,148,776, Cl. 260-33.40R.

Dunlop Limited: *See—*
French, Tom; Holmes, Thomas; Mitchell, William F.; and Kenney, Michael J., 4,148,348, Cl. 152-379.100.

Du Pont de Nemours, E. I., and Company: *See—*
Bednarz, Thomas K., 4,148,595, Cl. 425-75.000.
Bellina, Russell F.; and Fost, Dennis L., 4,148,918, Cl. 424-314.000.
Klein, David A., 4,149,013, Cl. 562-593.000.
Smith, Dewey H., Jr.; and Vernier, Vernon G., 4,148,896, Cl. 424-248.560.
Stock, Albert M., 4,149,004, Cl. 568-855.000.

Durkoppwerke GmbH: *See—*
Schmidt, Walter; and Riss, Gerhard, 4,148,268, Cl. 112-264.100.

Duville, Rene O.: *See—*
Schelfaut, Francois L.; Vanassche, Willy J.; Philippaerts, Herman A.; and Duville, Rene O., 4,148,647, Cl. 96-59.000.

Dvorachek, Harold A., to Echlin Manufacturing Company, The. Clamp for securing a plurality of elongated articles. 4,148,113, Cl. 24-16.00R.

Dyer, Terence A.: *See—*
Becker, Tilo; Storck, Hermann; and Dyer, Terence A., 4,148,179, Cl. 57-350.000.

Dymock, Kenneth R.: *See—*
Babjak, Juraj; Ettel, Victor A.; and Dymock, Kenneth R., 4,148,631, Cl. 75-101.0BE.

Dynamit Nobel Aktiengesellschaft: *See*—
Petersen, Egon N.; Vollkommer, Norbert; Blumenfeld, Georg; Richtzenhain, Hermann; and Vogt, Wilhelm, 4,149,008, Cl. 560-221.000.
Schultz, Neithardt; Martens, Peter; and Vahlensieck, Hans-Joachim, 4,148,831, Cl. 260-653.500.
Tews, Gunter; Wulff, Helmut; and Schade, Gerhard, 4,148,989, Cl. 528-177.000.

E. L. Caldwell & Sons, Inc.: *See*—
Steele, Billy S., 4,148,527, Cl. 298-10.000.

E. R. Squibb & Sons, Inc.: *See*—
Sundeen, Joseph E.; and Hauck, Frederic P., 4,149,001, Cl. 546-238.000.
Wade, Peter C.; and Vogt, B. Richard, 4,148,798, Cl. 260-301.000.

Eastman Kodak Company: *See*—
Blackwell, Samuel E.; and Barton, Kenneth R., 4,148,779, Cl. 260-40.00R.
Bubb, Wayne A., 4,148,651, Cl. 96-76.00C.
Chapman, Derek D.; Friday, James A.; and Elwood, James K., 4,148,642, Cl. 96-29.00D.
Chapman, Derek D.; and Wu, E-Ming, 4,148,643, Cl. 96-29.00D.
Dedinas, Jonas, 4,149,015, Cl. 568-637.000.
Dubois, David R., 4,148,823, Cl. 260-571.000.
Dulmage, William J.; and Fields, Alfred E., 4,148,640, Cl. 96-1.0SD.
Green, James A., II; and Kalenda, Norman W., 4,148,641, Cl. 96-29.00D.
Martens, Richard H.; and Simpson, Charles J., 4,148,650, Cl. 96-76.00C.
Sylvester, Robert A., 4,148,652, Cl. 96-76.00C.
Syracuse, Carmelo R. L.; and Chisek, Alan S., 4,148,395, Cl. 206-414.000.

Eaton Corporation: *See*—
Collins, Marcus H.; and Patel, Kiritkumar R., 4,148,681, Cl. 156-405.00R.
Collins, Marcus H.; and Patel, Kiritkumar R., 4,148,682, Cl. 156-416.000.

Eaton, Sargent S., Jr., to RCA Corporation. Voltage boosting circuits. 4,149,232, Cl. 363-60.000.

Eberly, Paul E., Jr., to Exxon Research & Engineering Co. Reforming with multimetallic catalysts. 4,148,758, Cl. 252-436.000.

Ebihara, Heihachiro; and Sekiya, Fukuo, to Citizen Watch Company Limited. Driver circuit for electrochromic display device. 4,149,146, Cl. 58-23.00R.

Echlin Manufacturing Company, The: *See*—
Dvorachek, Harold A., 4,148,113, Cl. 24-16.00R.

Eckardt AG: *See*—
Kies, Walter, 4,148,545, Cl. 339-184.00M.

Eddleman, William L., to Dean, David B.; and Hayden, Douglas B., Jr., part interest to each. Method for purifying the liquor of a galvanizing process plant after contamination. 4,148,700, Cl. 204-130.000.

Edwards, David C.: *See*—
Almeida, June D.; and Edwards, David C., 4,148,876, Cl. 424-89.000.

Eggensperger, Heinz; and Diehl, Karl-Heinz, to Sterling Drug Inc. Preserving and disinfecting method employing certain bis-oxazolidines. 4,148,905, Cl. 424-272.000.

Eggert, Walter S., Jr., to Budd Company, The. Combined baggage rack and light assembly. 4,149,221, Cl. 362-73.000.

Eholzer, Ulrich: *See*—
Schubart, Rudiger; and Eholzer, Ulrich, 4,148,800, Cl. 260-306.70R.

Eichinger, Johann, to Carl Hurth Maschinen-und Zahnradfabrik. Railway vehicle drive. 4,148,262, Cl. 105-131.000.

Eifer, Ralf: *See*—
Winter, Friedhelm; Buhle, Klaus; and Eifer, Ralf, 4,149,048, Cl. 200-61.540.

Eigenmann, Ludwig. Method for producing improved retroreflective system for sign surfaces, and improved systems produced thereby. 4,148,561, Cl. 350-105.000.

Eisenberg, Morris, to Electrochimica Corporation. Galvanic cell employing copper ore active cathode materials. 4,148,977, Cl. 429-194.000.

Eisenhauer, Rudolf; Haas, Helmut; Haude, Friedhelm; and Greifenberg, Jurgen, to Klockner-Humboldt-Deutz AG. Apparatus for the release of the jacket material of rod-shaped carriers and recovery of the same, particularly of waste welding rods. 4,148,440, Cl. 241-54.000.

Ekoperl GmbH: *See*—
Pape, Hans; and Siebel, Joseph, 4,148,941, Cl. 427-214.000.

Elco Corporation: *See*—
Sochor, Jerzy R., 4,148,537, Cl. 339-74.00R.

Elect Power Research Institute, Inc.: *See*—
Kothmann, Richard E.; and Whirlow, Donald K., 4,149,134, Cl. 336-57.000.

Electrochimica Corporation: *See*—
Eisenberg, Morris, 4,148,977, Cl. 429-194.000.

Eli Lilly and Company: *See*—
Day, William A.; and Lavagnino, Edward R., 4,148,809, Cl. 260-345.300.
Wright, Ian G., 4,148,817, Cl. 260-448.80R.

Elitex, Koncern textilniho strojirenstvi: *See*—
Hlavacek, Ivo, 4,148,778, Cl. 260-37.0EP.

Elliott, Robert D.: *See*—
Temple, Carroll G., Jr.; Elliott, Robert D.; Rose, Jerry D.; and Montgomery, John A., 4,148,999, Cl. 544-258.000.

Ellis, Howard F.: *See*—
Sakshaug, Eugene C.; and Ellis, Howard F., 4,148,135, Cl. 29-621.000.

Ellmers, Charles R., to Fluid Controls, Inc. Free delivery return valve and associated system. 4,148,337, Cl. 137-493.000.

Elms, Ronald D.: *See*—
DeRyke, Thomas V.; Fedesna, Kenneth J.; and Elms, Ronald D., 4,148,582, Cl. 355-97.000.

Elscint, Ltd.: *See*—
Ben-Zeev, Dan; Beer, Zvi; and Inbar, Dan, 4,149,079, Cl. 250-445.00T.

Elwood, James K.: *See*—
Chapman, Derek D.; Friday, James A.; and Elwood, James K., 4,148,642, Cl. 96-29.00D.

Emery Industries, Inc.: *See*—
Lamont, James; and Braun, Robert J., 4,148,764, Cl. 260-22.00D.

Enders, Edgar, to Bayer Aktiengesellschaft. Process for the preparation of 2-aryliminothiazoline solutions. 4,148,799, Cl. 260-306.70T.

Endo, Kunio: *See*—
Harada, Susumu; and Endo, Kunio, 4,148,283, Cl. 123-32.0EG.

Endo, Yukio: *See*—
Abe, Shuzo; Endo, Yukio; and Otsuki, Yoshito, 4,148,182, Cl. 58-16.00R.

Endress & Hauser GmbH & Co.: *See*—
Richter, Claus, 4,149,120, Cl. 324-132.000.

Enemark, Robert B.; and Richtarcsik, Paul S., to American District Telegraph Company. Battery discriminator circuit for smoke detectors. 4,149,162, Cl. 340-636.000.

Engle, Charles J., to Phillips Petroleum Company. Evaluating surfactants. 4,148,217, Cl. 73-60.100.

Engle, William L.; Zuverink, Charles E.; Vander Kolk, Richard A.; Brooks, Thomas L.; and Weaver, Cecil L., to Cyclone International Incorporated. Animal pen construction. 4,148,277, Cl. 119-20.000.

English Electric Valve Company Limited: *See*—
Smith, John P., 4,149,234, Cl. 363-133.000.

Enso-Gutzeit Osakeyhtio: *See*—
Surakka, Jorma; and Lankinen, Matti, 4,148,722, Cl. 209-211.000.

Enterprise Machine and Development Corporation: *See*—
Price, Samuel T., 4,148,116, Cl. 28-254.000.

Eppley, William J., to Honeywell Inc. Stable electrolyte for reserve electrochemical cells. 4,148,974, Cl. 429-101.000.

Epps, Harold R., to Dominion Bridge Company, Limited. Mold tube alignment device. 4,148,351, Cl. 164-150.000.

Erdmann, Joachim C.; Gellert, Robert I.; and Skaugset, Richard L., to Boeing Company, The. Laser gauge for measuring changes in the surface contour of a moving part. 4,148,587, Cl. 356-356.000.

Ervine, Albert W. G., to Remington Arms Company, Inc. Shot loading machine. 4,148,243, Cl. 86-23.000.

Espeillac, Marcellin: *See*—
Ab der Halden, Charles; Espeillac, Marcellin; and Szabo, Georges, 4,148,749, Cl. 252-415.000.

Estes, Earl M., to American Technology Corporation. Pattern generating system and method. 4,149,178, Cl. 358-10.000.

Etablissement Viridis: *See*—
Conti, Franco, 4,148,907, Cl. 424-274.000.

Ettel, Victor A.: *See*—
Babjak, Juraj; Ettel, Victor A.; and Dymock, Kenneth R., 4,148,631, Cl. 75-101.0BE.

Euteco S.p.A.: *See*—
Ligorati, Ferdinando; Invernizzi, Renzo; Collu, Carlo; and Fontanesi, Maurizio, 4,148,755, Cl. 252-429.00C.

Evani, Syamalarao: *See*—
Banga, Leigh B.; Tuttle, Carole K.; and Evani, Syamalarao, 4,148,945, Cl. 427-304.000.

Evans, Robert F., to Smith International, Inc. Rock bit with wear resistant inserts. 4,148,368, Cl. 175-329.000.

Evans, Ronald H.; and Miller, Jon M. Method and means for detecting change in tire pressure. 4,149,140, Cl. 340-58.000.

Evans, Samuel, to Ciba-Geigy Corporation. Novel phenol stabilizers. 4,148,820, Cl. 260-463.000.

Everett, Buford R.: *See*—
Farazandeh, Assadollah; and Everett, Buford R., 4,148,203, Cl. 72-21.000.

Everett, Peter K., to Dextec Metallurgical Proprietary Limited. Refining of ferrous and base metal sulphide ores and concentrates. 4,148,698, Cl. 204-118.000.

EVG Entwicklungsu. Verwertungs-GmbH: *See*—
Gott, Hans; Ritter, Josef; Ritter, Klaus; Ritter, Gerhard; and Scherr, Rudolf, 4,149,059, Cl. 219-56.000.

Ewing, Gary B.; and Provost, Wayne A. Dispenser for cartons. 4,148,418, Cl. 222-183.000.

Ex-Cell-O Corporation: *See*—
Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark, John S., 4,148,246, Cl. 90-11.00D.

Exxon Research & Engineering Co.: *See*—
Eberly, Paul E., Jr., 4,148,758, Cl. 252-436.000.
Henderson, Don J., 4,148,969, Cl. 428-458.000.
Holder, Clinton H., 4,148,711, Cl. 208-27.000.
Langer, Arthur W., Jr., 4,148,756, Cl. 252-429.00B.
Pine, Lloyd A., 4,148,750, Cl. 252-416.000.

Fabian, Arthur C.: *See*—
Brown, Richard E.; Unangst, Paul C.; Fontsere, Frank; and Fabian, Arthur C., 4,148,806, Cl. 260-326.290.

Fadeev, Alexandr I.: *See*—
Artemiev, Lev N.; Batjukov, Vladimir I.; and Fadeev, Alexandr I., 4,149,087, Cl. 250-507.000.

Fairbanks, Norman P.: *See*—
Zelahy, John W.; Fairbanks, Norman P.; and Maegly, Robert E., 4,148,494, Cl. 277-53.000.

Fairchild Camera and Instrument Corporation: *See*—
Alter, Martin J., 4,149,177, Cl. 357-50.000.

Farafontov, Vladimir I.; Sokhor, Mirra I.; Kushkova, Natalia G.; Digonsky, Viktor V.; and Lysanov, Vladislav S., to Vsesojuzny Nauchni-Issledovatelsky Institut Abrazivov I Shlifovania. Method of preparing polycrystalline cubic boron nitride. 4,148,863, Cl. 423-290.000.

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Farr, Emory W.: *See*—
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Farrar, Jack R.: *See*—
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Fathauer, George H., to Dickey-john Corporation. Wireless seed detecting and monitoring apparatus. 4,149,163, Cl. 340-684.000.

Fattinger, Volker, to Ciba-Geigy Corporation. Process for separating SO_2 from a current of gas containing the same. 4,148,868, Cl. 423-523.000.

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DeRyke, Thomas V.; Fedesna, Kenneth J.; and Elms, Ronald D., 4,148,582, Cl. 355-97.000.

Fedoseev, Dmitry V.; Deryagin, Boris V.; Bakul, Valentin N.; Prikhna, Alexei I.; Gerasimenko, Valentin K.; Poltoratsky, Vladimir G.; Nikitin, Jury I.; Vnukov, Stanislav P.; and Varnin, Valentin P. Polycrystalline superhard material and method of producing thereof. 4,148,964, Cl. 428-403.000.

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Feiner, Alexander: *See*—
Balzer, Gerry C.; and Feiner, Alexander, 4,149,042, Cl. 179-99.000.

Feldman, Bernard, to Feldman, Bernard. Liquid crystal display device and method of fabrication. 4,148,128, Cl. 29-592.00R.

Fenwick, Jay G., to Litton Business Systems, Inc. Modular display cases. 4,148,535, Cl. 312-304.000.

Fer, Pete. Blinker assembly. 4,148,172, Cl. 54-80.000.

Ferring AB: *See*—
Mulder, Jan L., deceased; and Carlsson, Lars A. I., 4,148,787, Cl. 260-112.50R.

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Dulmage, William J.; and Fields, Alfred E., 4,148,640, Cl. 96-1.0SD.

Filak, Paul T.: *See*—
Waddington, William T.; Jenkins, Harold F.; and Filak, Paul T., 4,148,136, Cl. 29-629.000.

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Breitenfellner, Franz; and Fink, Roland, 4,148,955, Cl. 428-143.000.
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Firestone Tire & Rubber Company, The: *See*—
Halasa, Adel F.; and Hall, James E., 4,148,984, Cl. 526-187.000.

Fischer, Gary W.: *See*—
Yuhash, Ladd; and Fischer, Gary W., 4,148,259, Cl. 102-93.000.

Fischer Geselischaft m.b.H.: *See*—
Staufer, Adolf; and Hieblinger, Rudolf, 4,148,502, Cl. 280-615.000.

Fischer, Hermann, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Inking system for lithographic offset printing machines. 4,148,256, Cl. 101-350.000.

Fisher Controls Company: *See*—
Holtgraver, Edward G., 4,148,458, Cl. 251-148.000.

Fisher, Howard T. Symbols for identifying characteristics. 4,148,507, Cl. 283-34.000.

Fisher, James A.: *See*—
Byrd, Fred; and Fisher, James A., 4,148,946, Cl. 427-319.000.

Five Foxes, Inc.: *See*—
Fox, Alvin F., 4,148,328, Cl. 131-175.000.

Fleer, Ernst O., to Siemens Aktiengesellschaft. Dental turbine handpiece. 4,148,143, Cl. 32-27.000.

Fleischhacker, James E.; Roberts, Lincoln E.; and Willette, Albert D., to AMP Incorporated. Apparatus for connecting pairs of wires. 4,148,118, Cl. 29-33.00K.

Fleming, Garold L.: *See*—
Graber, Kurt; Yatcilla, George; and Fleming, Garold L., 4,148,254, Cl. 100-179.000.

Flemons, Ralph S., to Canadian General Electric Company Limited. Two wire multiple switching system. 4,149,213, Cl. 361-191.000.

Flint, John R.: *See*—
Axelrod, Donald J.; and Flint, John R., 4,148,579, Cl. 355-41.000.

Floden, Mats, to Defibrator Aktiebolag. Method and device for controlling the energy consumption in a pulp refining system. 4,148,439, Cl. 241-28.000.

Florida, Roy; and Connelly, Glen J. Automatic dispensing apparatus. 4,148,415, Cl. 222-76.000.

Fluid Controls, Inc.: *See*—
Ellmers, Charles R., 4,148,337, Cl. 137-493.000.

Fluid Device Corporation: *See*—
Richards, George B., 4,148,334, Cl. 137-389.000.

FMC Corporation: *See*—
de Meulemeester, Jean-Claude, 4,148,335, Cl. 137-484.800.

Foelix, Heinz D.; and Lang, Georg, to Inventio AG. Apparatus for actuating hoistway doors of an elevator. 4,148,377, Cl. 187-52.0LC.

Fog, Ernst; and Jepsen, Carl J., to Nordiske Kabel- og Traadfabriker A/S. Fastening for a hydraulic motor. 4,148,464, Cl. 254-150.0FH.

Fogle, Ronald L.; and Strausburg, Larry D., to Monarch Marking Systems, Inc. Hand-held labeler. 4,148,678, Cl. 156-384.000.

Foley, Joseph T.: *See*—
Christenson, David N.; Freeman, Frank A.; and Foley, Joseph T., 4,148,618, Cl. 55-385.00G.

Fontanesi, Maurizio: *See*—
Ligorati, Ferdinando; Invernizzi, Renzo; Collu, Carlo; and Fontanesi, Maurizio, 4,148,755, Cl. 252-429.00C.

Fontsere, Frank: *See*—
Brown, Richard E.; Unangst, Paul C.; Fontsere, Frank; and Fabian, Arthur C., 4,148,806, Cl. 260-326.290.

Ford Motor Co.: *See*—
Rao, V. Durga Nageswar, 4,148,354, Cl. 165-8.000.

Foreman, Donald S., to Honeywell Inc. Multi-drop communications device. 4,149,030, Cl. 178-59.000.

Forker, Dieter: *See*—
Bracke, Pieter; Forker, Dieter; and Kropsch, Dieter, 4,148,117, Cl. 29-25.160.

Forlow, John K.: *See*—
Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark, John S., 4,148,246, Cl. 90-11.00D.

Forster, Siegfried; and Kleemann, Manfred, to Kernforschungsanlage Julich Gesellschaft m. beschrankter Haftung. Heat exchanger matrix for recuperative heat exchange among three media and modular heat exchangers combining a plurality of such matrices. 4,148,357, Cl. 165-140.000.

Fortenberry, Herman W. Holder for a writing instrument. 4,148,424, Cl. 224-218.000.

Fost, Dennis L.: *See*—
Bellina, Russell F.; and Fost, Dennis L., 4,148,918, Cl. 424-314.000.

Fottinger, Walter: *See*—
Tischer, Kurt; and Fottinger, Walter, 4,148,958, Cl. 428-196.000.

Fox, Alvin F., to Five Foxes, Inc. Safety smoker. 4,148,328, Cl. 131-175.000.

Fox, Sidney V.: *See*—
Chu, Vincent H. K.; Benedict, Louis G.; and Fox, Sidney V., 4,148,692, Cl. 201-36.000.

Foxboro Company, The: *See*—
Freitas, Manuel P., 4,149,237, Cl. 364-107.000.

Foxwell, Lurman H.: *See*—
Schneider, Alan A.; Bowser, George C.; and Foxwell, Lurman H., 4,148,975, Cl. 429-174.000.

Fraccica, Richard A.: *See*—
Brindell, Gordon D.; and Fraccica, Richard A., 4,148,950, Cl. 427-421.000.

Franc, Paul. Metal clad door. 4,148,157, Cl. 49-501.000.

Franceschi, Giovanni: *See*—
Palamidessi, Giorgio; Zarini, Franco; Franceschi, Giovanni; Schioppacassi, Giovanna; and Arcamone, Federico, 4,148,996, Cl. 544-26.000.

Francis, Robert L.: *See*—
McMillen, Richard E.; Francis, Robert L.; and DePauw, Richard A., 4,148,323, Cl. 130-27.00T.

Frank, William A.: *See*—
Froyd, Stanley G.; Frank, William A.; and Roome, Richard, 4,149,235, Cl. 364-101.000.

Franke, Rainer: *See*—
Strobel, Wolfgang; and Franke, Rainer, 4,148,754, Cl. 252-429.00C.

Fraze, Ermal C.: *See*—
Brown, Omar L., 4,148,410, Cl. 220-269.000.

Freedman, M. David: *See*—
Idelsohn, Jerome M.; Mueller, Paul A.; Freedman, M. David; and Hebert, Raymond T., 4,149,089, Cl. 250-563.000.

Freeman Chemical Corporation: *See*—
Cordts, Howard P.; and Grandlic, Eugene J., 4,148,854, Cl. 264-45.300.

Freeman, Frank A.: *See*—
Christenson, David N.; Freeman, Frank A.; and Foley, Joseph T., 4,148,618, Cl. 55-385.00G.

Freeman, James W. Variable speed fishing reel. 4,148,228, Cl. 74-789.000.

Freitas, Manuel P., to Foxboro Company, The. Industrial process control system. 4,149,237, Cl. 364-107.000.

French, John B.; Reid, Neil M.; and Buckley, Janette A., to Sciex Inc. Multiple stage cryogenic pump and method of pumping. 4,148,196, Cl. 62-55.500.

French, Tom; Holmes, Thomas; Mitchell, William F.; and Kenney, Michael J., to Dunlop Limited. Tire and wheel rim assemblies. 4,148,348, Cl. 152-379.100.

Fretted Industries, Incorporated: *See*—
Schlacher, Rudolf W., 4,148,423, Cl. 224-258.000.

Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, to Vockenhuber, Karl; and Hauser, Raimund. Motion-picture camera accommodating silent-film and sound-film cassettes. 4,148,566, Cl. 352-27.000.

Frey, Volker; Muller, Horst; and Riedle, Rudolf, to Die Wacker-Chemie GmbH. Process for preparing disiloxanes. 4,148,818, Cl. 260-448.20E.

Friday, James A.: *See*—
Chapman, Derek D.; Friday, James A.; and Elwood, James K., 4,148,642, Cl. 96-29.00D.
Friedman, Yizhak: *See*—
Gerstmann, Joseph; and Friedman, Yizhak, 4,148,195, Cl. 62-6.000.
Friedrich, Heinz: *See*—
Beschke, Helmut; and Friedrich, Heinz, 4,149,002, Cl. 546-251.000.
Fritts, Rex E., to Amana Refrigeration, Inc. Variable power control microwave oven. 4,149,057, Cl. 219-10.55B.
Fritz, Jurgen: *See*—
Kreutz, Werner; Henne, Manfred; and Fritz, Jurgen, 4,149,109, Cl. 315-58.000.
Fritz, William B.; and Hopkins, John R., to AMP Incorporated. Multipair cable having low crosstalk. 4,149,026, Cl. 174-32.000.
Froyd, Stanley G.; Frank, William A.; and Roome, Richard, to McDonnell Douglas Corporation. Computer numerical control system for machine tool. 4,149,235, Cl. 364-101.000.
Frutiger, Peter. Method and apparatus for enciphering and deciphering audio information. 4,149,035, Cl. 179-1.50R.
Frutschi, Hansulrich, to BBC Brown, Boveri & Company Limited. Method for regulating the power output of a thermodynamic system operating on a closed gas cycle and apparatus for carrying out the method. 4,148,191, Cl. 60-652.000.
Fuel Systems of Minnesota: *See*—
Ahlers, William P., 4,148,285, Cl. 123-119.00D.
Fugleberg, Sigmund P.; and Poijarvi, Jaakko T. I., to Outokumou Oy. Hydrometallurgical treatment of soluble silicate-bearing zinc materials. 4,148,862, Cl. 423-106.000.
Fuji Heavy Industries Co., Ltd.: *See*—
Kodama, Masayuki; and Kobayashi, Toshio, 4,148,230, Cl. 74-859.000.
Fuji Kiko Babushiki Kaisha: *See*—
Yamanashi, Chusaku, 4,148,525, Cl. 297-367.000.
Fuji Photo Film Co., Ltd.: *See*—
Kondoh, Syunichi; Matsufuji, Akihiro; Umehara, Akira; Sato, Akira; and Ogawa, Akira, 4,148,658, Cl. 96-115.00P.
Tani, Yoshio; Takahashi, Eizi; Hachisuka, Mitunori; and Togami, Sin, 4,148,851, Cl. 264-23.000.
Fujii, Yoshishige: *See*—
Morita, Minoru; Fujii, Yoshishige; and Taniguchi, Yasuo, 4,148,606, Cl. 422-21.000.
Fujisaki, Koichiro: *See*—
Yamaoka, Kojiro; Azuma, Toshiro; and Fujisaki, Koichiro, 4,148,382, Cl. 192-4.00A.
Fujitsu Limited: *See*—
Miwa, Hirohide; and Terakawa, Toshiaki, 4,149,112, Cl. 340-768.000.
Nagai, Yasuo; Touge, Takashi; Yamagata, Matazou; and Sonetsuji, Noboru, 4,149,071, Cl. 250-199.000.
Fujiwara, Mitsugu: *See*—
Wada, Tasaku; Aoki, Ren; and Fujiwara, Mitsugu, 4,149,196, Cl. 358-286.000.
Fujiwhara, Mitsuto; Sasaki, Takashi; Uchida, Takashi; and Kobayashi, Morio, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic materials. 4,148,656, Cl. 96-100.00R.
Fukumitsu, Hirotaka: *See*—
Yamada, Hideaki; Takahashi, Satomi; Sumino, Kazushige; Fukumitsu, Hirotaka; and Yoneda, Koji, 4,148,688, Cl. 195-29.000.
Fukunishi, Takumi; and Miura, Masamichi, to Toyo Soda Manufacturing Co., Ltd. Process of producing metallic chromium. 4,148,628, Cl. 75-10.00R.
Fukuzaki, Takaharu: *See*—
Kishi, Shoichi; Fukuzaki, Takaharu; and Nagaoka, Yukio, 4,149,155, Cl. 340-524.000.
Fulwyler, Mack J., to Coulter Electronics, Inc. Single drop separator. 4,148,718, Cl. 209-3.100.
Funato, Hiroyoshi: *See*—
Abe, Michiharu; and Funato, Hiroyoshi, 4,149,269, Cl. 365-215.000.
Funfschilling, Peter, to Sandoz Ltd. 2-Oxabicyclo[3.2.1]octan-3-ones. 4,148,807, Cl. 260-343.210.
Futaba Denshi Kogyo K.K.: *See*—
Kishino, Takao, 4,149,147, Cl. 340-760.000.
Fydelor, Peter J., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Graft co-polymers. 4,148,839, Cl. 260-857.00G.
G. D. Searle & Co.: *See*—
Collins, Paul W.; and Pappo, Raphael, 4,149,006, Cl. 560-53.000.
Gabrielson, Lyle G.: *See*—
Burr, Richard R.; Gabrielson, Lyle G.; and Masten, Richard R., Jr., 4,148,429, Cl. 229-36.000.
GAF Corporation: *See*—
Ruhf, Truman J., 4,148,944, Cl. 427-256.000.
Gagne, Camille. Device for removal of animal droppings. 4,148,513, Cl. 294-55.000.
Gallien, John W. Furniture fastener system. 4,148,106, Cl. 5-296.000.
Gamble, Banks R. Frame supporting mechanism for centrifugal honey extractors. 4,148,733, Cl. 210-361.000.
Gancy, Alan B.: *See*—
Sturtevant, Robert L.; Karsay, Bela I.; and Gancy, Alan B., 4,148,836, Cl. 260-683.620.
Gannon, Patrick M.; and Sy, Kian-Bon K., to International Business Machines Corporation. High speed store request processing control. 4,149,245, Cl. 364-200.000.
Gar Design Research, Inc.: *See*—
Garchinsky, John S., 4,148,456, Cl. 248-219.400.
Garchinsky, John S., 4,149,230, Cl. 362-403.000.
Garchinsky, John S., to Gar Design Research, Inc. Adjustable articulated pole mount assembly. 4,148,456, Cl. 248-219.400.
Garchinsky, John S., to Gar Design Research, Inc. Visual latching condition indicating system for tall pole carrier assembly. 4,149,230, Cl. 362-403.000.
Gardner, Derek V., to Beecham Group Limited. Chromans to treat depression and reduce appetite. 4,148,909, Cl. 424-283.000.
Gardner, Jeffrey M., to Container Corporation of America. Cushioning insert. 4,148,396, Cl. 206-521.000.
Gardner, Jeffrey M., to Container Corporation of America. Convertible partition arrangement. 4,148,428, Cl. 229-15.000.
Garling, David L.: *See*—
Buckler, Robert T.; and Garling, David L., 4,149,007, Cl. 560-53.000.
Garren, John F., Jr.: *See*—
Niessen, Frank R.; and Garren, John F., Jr., 4,148,452, Cl. 244-195.000.
Garvey, Steven E., to Hewlett-Packard Company. Adjustable fiber optic connector. 4,148,557, Cl. 350-96.200.
Gast, Uwe, to Dr. Ing. Rudolf Hell GmbH. Method and apparatus for producing rastered printed forms. 4,149,195, Cl. 358-283.000.
Gates, Jackson. Orthostereoscopic plotter, apparatus and method of use. 4,148,583, Cl. 356-2.000.
Gates, Jackson. Methods of stereo relief modeling. 4,148,645, Cl. 96-46.000.
Gates, Paul E.; and Kimball, Stephen F., to GTE Sylvania Incorporated. Incandescent lamp having embedded support means. 4,149,103, Cl. 313-315.000.
Gates Rubber Company, The: *See*—
Redmond, John D., Jr.; and Tone, Robert P., 4,148,225, Cl. 74-243.00R.
Gaubert, Rene J. Product wrapping machine and method. 4,148,170, Cl. 53-466.000.
Gauthier, Francis, to Societe Anonyme Dite: Les Cables de Lyon. Method and device for connecting optical fibres. 4,148,559, Cl. 350-96.210.
Gehring, Kenneth C., to DEC International, Inc. Water heating system and combined storage tank and heat exchanger unit therefor. 4,148,355, Cl. 165-39.000.
Gelbein, Abraham P.; and Kwon, Joon T., to Lummus Company, The. Treatment of cyanide byproduct in nitrile production. 4,148,865, Cl. 423-358.000.
Gellert, Robert I.: *See*—
Erdmann, Joachim C.; Gellert, Robert I.; and Skaugset, Richard L., 4,148,587, Cl. 356-356.000.
Gendelman, Bernard: *See*—
Trop, Moshe; and Herbst, Joseph, 4,148,703, Cl. 204-180.00G.
General Dynamics Corporation: *See*—
Shores, Marvin W., 4,148,543, Cl. 339-143.00R.
General Electric Company: *See*—
Goossens, John C., 4,148,843, Cl. 260-874.000.
Grisik, John J.; and Wortman, David J., 4,148,936, Cl. 427-253.000.
Hillig, William B.; and Morelock, Charles R., 4,148,894, Cl. 428-242.000.
Hrycik, Kenneth S., 4,149,022, Cl. 13-6.000.
Kennedy, Richard W.; and Tefft, Edward G., 4,148,672, Cl. 148-33.500.
Kindig, Alan L., 4,148,137, Cl. 29-732.000.
Mark, Victor; and Wilson, Phillip S., 4,148,773, Cl. 260-29.1SB.
Sakshaug, Eugene C.; and Ellis, Howard F., 4,148,135, Cl. 29-621.000.
Wolfinger, John F., 4,148,222, Cl. 73-650.000.
Zelahy, John W.; Fairbanks, Norman P.; and Maegly, Robert E., 4,148,494, Cl. 277-53.000.
General Mills, Inc.: *See*—
Wagenknecht, Austin C., deceased; Daravingas, George V.; and Koski, William E., 4,148,872, Cl. 424-48.000.
General Motors Corporation: *See*—
Benton, Robert L., 4,148,226, Cl. 74-459.000.
Hollar, Arthur W., Jr., 4,148,519, Cl. 296-97.00H.
Loper, Edward J., Jr., 4,149,260, Cl. 364-817.000.
Majernik, Paul M., 4,148,271, Cl. 116-67.00R.
Rodondi, Andrew F., 4,148,538, Cl. 339-91.00R.
Schallhorn, Thomas L.; and Beardmore, John M., 4,148,200, Cl. 64-27.00C.
Schroeder, Thaddeus, 4,148,372, Cl. 180-114.000.
Schubert, Malvin L., 4,148,247, Cl. 91-49.000.
General Signal Corporation: *See*—
Hofstetter, Edward G., Jr., 4,148,215, Cl. 73-54.000.
Genty, Robert, to Baudin, Rene. Semi-trailer lifting and coupling gear for tractor vehicles. 4,148,497, Cl. 280-479.00A.
Georgiev, Slavi A.; and Stojnov, Dimitraki J. Soccer game. 4,148,484, Cl. 273-85.00R.
Gerasimenko, Valentin K.: *See*—
Fedoseev, Dmitry V.; Deryagin, Boris V.; Bakul, Valentin N.; Prikhna, Alexei I.; Gerasimenko, Valentin K.; Poltoratsky, Vladimir G.; Nikitin, Jury I.; Vnukov, Stanislav P.; and Varnin, Valentin P., 4,148,964, Cl. 428-403.000.
Gerasimova, Elena M.: *See*—
Korjukin, Alexandr V.; Vesnitskaya, Galina S.; Gerasimova, Elena M.; Gudimov, Matvei M.; Markina, Emma F.; Klitsov, Alexandr A.; Kovtun, Alexandr T.; Beriev, Georgy M.; and Vasilchenko, Viktor L., 4,148,939, Cl. 427-164.000.
Gershaw, Nathan: *See*—
Barnett, Gabriel; Gershaw, Nathan; and Mausner, Jack J., 4,148,875, Cl. 424-81.000.

Gerstmann, Joseph; and Friedman, Yizhak. Liquid piston heat-actuated heat pump and methods of operating same. 4,148,195, Cl. 62-6.000.

Gerth, Howard L., to United States of America, Energy. Coupling for joining a ball nut to a machine tool carriage. 4,148,235, Cl. 82-21.00R.

Gesellschaft fur Kernforschung m.b.H.: *See*—
Rudolph, Gunter; and Hild, Werner, 4,148,745, Cl. 252-301.10W.

Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen m.b.H.: *See*—
Hausberger, Helmut; and Schlosser, Peter, 4,148,861, Cl. 423-3.000.

Gestetner Limited: *See*—
Spicer, Leonard A.; and McGee, Derek J., 4,148,767, Cl. 260-22.0TN.

Gewerkschaft Eisenhutte Westfalia: *See*—
Stuckmann, Dieter; and Jutte, Hans, 4,148,592, Cl. 405-141.000.

Geyer, Robert P., to Standard Car Truck Company. Dual rate spring with elastic spring coupling. 4,148,469, Cl. 267-4.000.

Giberti, Richard A.: *See*—
Agarwal, Jagdish C.; Giberti, Richard A.; and Petrovic, Louis J., 4,148,615, Cl. 55-73.000.

Giddings, Gary M.; Langdon, Glen G., Jr.; Malowany, Alfred S.; and Williams, Robin, to International Business Machines Corporation. Multi-color video display systems using more than one signal source. 4,149,184, Cl. 358-81.000.

Gierek, Adam; Bajka, Lech; and Kolpak, Jan, to Politechmika Slaska Im. Wincentego Pstrowskiego. Removal of excess molten aluminum or its alloys from articles coated by the hot-dip method. 4,148,942, Cl. 427-241.000.

Ginsburg, Milton. Toilet seat hinge. 4,148,104, Cl. 4-240.000.

Giraldi, Piernicola: *See*—
Doria, Gianfederico; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, 4,148,900, Cl. 424-263.000.

Girou, Andre: *See*—
Roques, Henri; and Girou, Andre, 4,148,728, Cl. 210-58.000.

Giroud, Pierre: *See*—
Bourrain, Paul; and Giroud, Pierre, 4,148,963, Cl. 428-392.000.

Gist-Brocades N.V.: *See*—
Smink, Dirk A., 4,148,891, Cl. 424-181.000.

Giudicelli, Don P. R. L.; and Najer, Henry, to Synthelabo. 1-(3'-Trifluoromethylthiophenyl)-2-ethylaminopropane pharmaceutical composition and method for treating obesity. 4,148,923, Cl. 424-330.000.

Giuliano, Joseph A.: *See*—
Jacaruso, Salvatore; and Giuliano, Joseph A., 4,148,322, Cl. 128-464.000.

Glacier Metal Company Limited, The: *See*—
Davies, Glyndwr J., 4,148,966, Cl. 428-411.000.

Gliemeroth, Georg, to Jenaer Glaswerk Schott & Gen. Method for making glass optical fibers. 4,148,621, Cl. 65-3.00A.

Glogolja, Miroslav, to RCA Corporation. Thermal protection of amplifiers. 4,149,124, Cl. 330-298.000.

Gmeinder, Hermann, to Kaltenbach & Voigt GmbH & Co. Dental apparatus having a plurality of dental instruments. 4,149,094, Cl. 307-12.000.

Gnaga, Vittorio. Motor-curler unit for automatic application of curlers to the hair to be treated. 4,148,330, Cl. 132-34.00C.

Godson, David H.: *See*—
Brookes, Robert F.; Godson, David H.; Greenwood, Douglas; Tulley, Margaret; and Wakerley, Stanley B., 4,148,626, Cl. 71-92.000.

Goedicke, Eitel, to Hoechst Aktiengesellschaft. Catalytic converter for exhaust gases. 4,148,860, Cl. 422-176.000.

Goff, James E.; Hayes, Edwin T.; and Green, A. J. Seldon, to Tennessee Plastics, Inc. (TPI). Electric space heater unit. 4,149,065, Cl. 219-365.000.

Golda, Eugene; Wilkes, Alan L.; and Chu, Simon L., to Polychrome Corporation. Method for producing lithographic printing plates. 4,148,649, Cl. 96-75.000.

Golding, Frank E.; and Farr, Emory W., to Transducers, Inc. Strain gage load cell. 4,148,219, Cl. 73-141.00A.

Goldman, Robert N. System for specifying custom garments. 4,149,246, Cl. 364-200.000.

Goldstein, Howard E.: *See*—
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Goniwicha, Dennis R. Method and apparatus for attaching members together. 4,148,124, Cl. 29-432.000.

Gonzales, Arthur D.: *See*—
Kochel, Leroy J.; Kalweit, Harvey W.; Gonzales, Arthur D.; Church, Clyde L.; and Ou-Yang, Paul H., 4,148,133, Cl. 29-571.000.

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Reed, Robert D.; and Goodnight, Hershel E., 4,148,599, Cl. 431-11.000.

Goodrich, Donald E. Mobile home block and tie-down. 4,148,162, Cl. 52-23.000.

Goodyear Tire & Rubber Company, The: *See*—
Bryson, Jay G., 4,148,763, Cl. 260-2.300.
Harding, Norman B., 4,148,680, Cl. 156-403.000.
Klemmensen, Daniel F.; and Bauer, Richard G., 4,148,746, Cl. 252-316.000.
Stalter, Robert J.; and Burkholder, Theodore B., 4,148,855, Cl. 264-54.000.
Throckmorton, Morford C., 4,148,983, Cl. 526-139.000.
Welsby, Joseph A., 4,148,342, Cl. 138-109.000.

Goossens, John C., to General Electric Company. Compositions of capped polyphenylene oxides and alkenyl aromatic resins. 4,148,843, Cl. 260-874.000.

Goransson, Jan. Miniature golf course including pivotable obstacle. 4,148,490, Cl. 273-176.00B.

Gordos Corporation: *See*—
Lacis, Laimons; and Horvath, Steven, 4,149,130, Cl. 335-154.000.

Gordy, Robert S.; Sanders, David E.; and Chambers, Ramon P., to NCR Corporation. Four phase to two phase correlator. 4,149,121, Cl. 325-321.000.

Gorfien, Harold; Rahman, Abdul R.; and Westcott, Donald E., to United States of America, Army. Stabilized frozen potato salad. 4,148,929, Cl. 426-576.000.

Gorjan, Richard. Induction motors having squirrel cage rotors analogous to commutator motors. 4,149,114, Cl. 318-731.000.

Gorman, Joseph G.; Hundstad, Richard L.; Voshall, Roy E.; and Wayland, Paul O., to Westinghouse Electric Corp. Cup-shaped contacts for vacuum interrupters having a continuous annular contact surface. 4,149,050, Cl. 200-144.00B.

Gorodissky, Leonid G.; and Romanov, Nikolai T., deceased (by Romanova, Anastasia I., administrator), to Vsesojuzny Nauchno-Issledovatelsky I Experimentalny Istitut po Pererabotke Khinicheskikh Volokon. Sealing device for high pressure apparatus. 4,148,493, Cl. 277-12.000.

Gorres, John M.; Hanson, Marlin M.; and Lund, Roger E., to Sperry Rand Corporation. Method of improving the operation of a single wall domain memory system. 4,149,265, Cl. 365-2.000.

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Kulabukhov, Vadim A.; Allakhverdov, Eduvard R.; Perlin, Boris A.; Shteinberg, Grigory S.; Afanasiev, Anatoly I.; Sheludko, Valentin V.; Nudelman, Boris I.; Volkov, Valery G.; Salomasov, Vasily F.; and Startsev, Jury V., 4,148,601, Cl. 432-109.000.

Gotomyo, Yasuo, to Toyo Kogyo Co., Ltd. Means for automatically opening rear storage compartment cover of an automobile. 4,148,516, Cl. 296-37.100.

Gott, Hans; Ritter, Josef; Ritter, Klaus; Ritter, Gerhard; and Scherr, Rudolf, to EVG Entwicklungsu. Verwertungs-GmbH. Electrical multi-spot resistance welding machine. 4,149,059, Cl. 219-56.000.

Gould Inc.: *See*—
Duble, Gerald R., 4,149,047, Cl. 200-50.00A.
Kussy, Frank W.; and Haydu, John L., 4,149,216, Cl. 361-357.000.

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Hoffmann, Herwig; Graefje, Heinz; Koernig, Wolfgang; and Winderl, Siegfried, 4,148,824, Cl. 260-585.00B.

Graham, Roger. Water pipe. 4,148,327, Cl. 131-173.000.

Grandlic, Eugene J.: *See*—
Cordts, Howard P.; and Grandlic, Eugene J., 4,148,854, Cl. 264-45.300.

Granges NYBY AB: *See*—
Lundbohm, Lennart, 4,148,341, Cl. 138-105.000.

Grant, Philip J., to Babcock & wilcox Company, The. Combination ion exchange and electrodialysis fluid purification apparatus. 4,148,708, Cl. 204-301.000.

Graphic Sciences, Inc.: *See*—
Costello, Matthew J.; De Luca, Albert M.; Saunders, Thomas K.; and McGuire, James F., 4,149,033, Cl. 179-1.00C.

Grasselli, Robert K.: *See*—
Brazdil, James F.; Suresh, Dev D.; and Grasselli, Robert K., 4,148,757, Cl. 252-432.000.

Grassle, Alfred; Schnurle, Hans; and Wilfert, Thomas, to Robert Bosch GmbH. Method and apparatus for cold starting fuel injected internal combustion engines. 4,148,282, Cl. 123-32.0EG.

Green, A. J. Seldon: *See*—
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Green, James A., II; and Kalenda, Norman W., to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible pyridylazopyrazole or pyrimidylazopyrazole dye-releasing compounds. 4,148,641, Cl. 96-29.00D.

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Pellar, Ronald J.; and Green, Leland D., 4,149,183, Cl. 358-75.000.

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Greenberg, Charles B.: *See*—
Breininger, J. Shannon; and Greenberg, Charles B., 4,148,940, Cl. 427-226.000.

Greenlee Bros. & Co.: *See*—
Kolnes, Kenneth O.; and Johnson, Wynsel J., 4,148,470, Cl. 269-101.000.

Greenwood, Douglas: *See*—
Brookes, Robert F.; Godson, David H.; Greenwood, Douglas; Tulley, Margaret; and Wakerley, Stanley B., 4,148,626, Cl. 71-92.000.

Gregor, Katalin, nee Balogh: *See*—
Csikos, Rezso; Balogh, Andras; Herendi, Jozsef; and Gregor, Katalin, nee Balogh, 4,148,959, Cl. 428-215.000.

Greifenberg, Jurgen: *See*—
Eisenhauer, Rudolf; Haas, Helmut; Haude, Friedhelm; and Greifenberg, Jurgen, 4,148,440, Cl. 241-54.000.
Gress, Robert W.; and Sands, Robert W., to Corning Glass Works. Method for continuous component encapsulation. 4,148,856, Cl. 264-71.000.
Gressitt, Tillman J.; and Smith, Arnold R., to Bell Telephone Laboratories, Incorporated. Customer service closures. 4,149,028, Cl. 174-65.00R.
Griffiths, David F.: *See*—
Card, Stuart E.; and Griffiths, David F., 4,149,041, Cl. 179-27.0CA.
Grisik, John J.; and Wortman, David J., to General Electric Company. Method for diffusion coating an Fe-Ni base alloy with chromium. 4,148,936, Cl. 427-253.000.
Gross-Given Manufacturing Company: *See*—
Lotspeich, Joseph A., 4,148,412, Cl. 221-75.000.
Gross-Scharmann, Franz, to Amazonen-Werke H. Dreyer. Cultivating machine. 4,148,364, Cl. 172-58.000.
Grote & Hartmann GmbH & Co. KG: *See*—
Konnemann, Alfred, 4,149,137, Cl. 337-295.000.
Groth, Wilhelm; and Hussmann, Peter, to Mittex Aktiengesellschaft. Silica gel of improved properties and process of making same. 4,148,864, Cl. 423-335.000.
Grow Chemical Corp.: *See*—
Tsou, Ivan H., 4,148,704, Cl. 204-181.00C.
Gruhier, Henri: *See*—
Sugier, Andre; Courty, Philippe; Deschamps, Andre; and Gruhier, Henri, 4,148,760, Cl. 252-455.00R.
GTE Sylvania Incorporated: *See*—
Burdick, Kenneth J.; Hand, Wilfred L.; Klein, Arthur H.; and Neal, Charles B., 4,149,181, Cl. 358-31.000.
Gates, Paul E.; and Kimball, Stephen F., 4,149,103, Cl. 313-315.000.
Lovely, John D., 4,149,180, Cl. 358-20.000.
Schreurs, Willy P., 4,148,935, Cl. 427-67.000.
Gudimov, Matvei M.: *See*—
Korjukin, Alexandr V.; Vesnitskaya, Galina S.; Gerasimova, Elena M.; Gudimov, Matvei M.; Markina, Emma F.; Klitsov, Alexandr A.; Kovtun, Alexandr T.; Beriev, Georgy M.; and Vasilchenko, Viktor L., 4,148,939, Cl. 427-164.000.
Guenard, Pierre, to Thomson-CSF. Backward wave oscillator tube for the production of microwave. 4,149,107, Cl. 315-3.600.
Guennou, Serge, to U.S. Phillips Corporation. Receiver for a HF-intrusion detection system. 4,149,157, Cl. 340-554.000.
Guenther, Karl R.: *See*—
Paquette, Elmer G.; and Guenther, Karl R., 4,148,676, Cl. 156-181.000.
Gugumus, Francois: *See*—
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Gulf Research & Development Company: *See*—
Paraskos, John A.; and Smith, Edward W., 4,148,716, Cl. 208-177.000.
Pellegrini, John P., Jr.; and Thayer, Helen I., 4,148,981, Cl. 526-16.000.
Gunn-Smith, Ronald A., to Metal Box Limited. Aerosol containers. 4,148,416, Cl. 222-94.000.
Gunst, Ole. Optical training device. 4,148,565, Cl. 351-2.000.
Gupta, Vidya S., to Canadian Patents and Development Limited. Treatment of viral infections. 4,148,889, Cl. 424-180.000.
Gurbin, Florian. Ice cube tray. 4,148,457, Cl. 249-130.000.
Gustav Wiegard Maschinenfabrik: *See*—
Holter, Karl; Schrewe, Hans; Diederich, Gerd; and Pleschiutschnigg, Fritz P., 4,148,145, Cl. 33-143.00L.
Guth, Hans: *See*—
Burger, Alex; Guth, Hans; Ludovici, Werner; and Rohe, Hermann, 4,148,752, Cl. 252-421.000.
Guyton, Floyd R. Adjustable height seat. 4,148,524, Cl. 297-345.000.
Gygli Technik AG: *See*—
Bachtiger, Hans, 4,148,604, Cl. 8-181.000.
H. Berthold AG: *See*—
Linde, Hans, 4,148,572, Cl. 354-15.000.
H. Koch & Sons Division, Gulf & Western Manufacturing Company: *See*—
Craig, Kenneth K., 4,148,224, Cl. 74-242.800.
Haas, Helmut: *See*—
Eisenhauer, Rudolf; Haas, Helmut; Haude, Friedhelm; and Greifenberg, Jurgen, 4,148,440, Cl. 241-54.000.
Habler, Adam L. Holder for a smoking-pipe. 4,148,422, Cl. 224-5.00R.
Hachisuka, Mitunori: *See*—
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Haefner, Guenther: *See*—
Brand, Peter; Haefner, Guenther; Diedrich, Fritz; and Kirchmann, Hans, 4,148,523, Cl. 297-55.000.
Haeger & Elsaesser: *See*—
Marquardt, Kurt, 4,148,727, Cl. 210-33.000.
Haendle, Joerg; and Sklebitz, Hartmut, to Siemens Aktiengesellschaft. X-ray diagnostic installation for X-ray tomographic images. 4,149,082, Cl. 250-445.00T.
Hahn, Alfred; and Dornheim, Hans P., to Siemens Aktiengesellschaft. Counterweight compensation for an X-ray examination apparatus. 4,149,078, Cl. 250-439.00R.
Haight, William J. Process and apparatus for separating particles by relative density. 4,148,725, Cl. 209-481.000.
Halasa, Adel F.; and Hall, James E., to Firestone Tire & Rubber Company, The. Catalyst system and process for polymerization of conjugatged dienes therewith. 4,148,984, Cl. 526-187.000.
Halbauer, Klaus, to Messer Grieshiem GmbH. Process for control or regulation of analog electrical machines. 4,149,236, Cl. 364-103.000.
Haley, George D., to R. C. Metals, Inc. Agglomeration of steel mill wastes. 4,148,627, Cl. 75-3.000.
Hall, James E.: *See*—
Halasa, Adel F.; and Hall, James E., 4,148,984, Cl. 526-187.000.
Hall, John B.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,148,826, Cl. 260-586.00G.
Halliburton Company: *See*—
Orrill, Larry M.; Regalbuto, John A.; Wilson, Michael L.; and Rutledge, Wayne L., 4,148,257, Cl. 102-24.0HC.
Halter, Mark A., to UOP Inc. Electrochemical oxidation of activated alkyl aromatic compounds. 4,148,696, Cl. 204-59.00R.
Hamada, Nagaharu; and Iwamura, Masahiro, to Hitachi, Ltd. CRT display apparatus of raster scanning type. 4,149,264, Cl. 364-900.000.
Hamburger, Jean: *See*—
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Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Hand-held labeler. 4,148,679, Cl. 156-384.000.
Hammann, Ingeborg: *See*—
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Hanlon, Robert G.; Craig, Joe A.; and Bangs, Leigh B., to Dow Chemical Company, The. Nonreversible freeze-thaw indicator. 4,148,748, Cl. 252-408.000.
Hannan, William J.: *See*—
Credelle, Thomas L.; Hannan, William J.; and Spong, Fred W., 4,148,636, Cl. 96-1.100.
Hannon Electric Company: *See*—
Hannon, Thomas W., 4,148,724, Cl. 209-403.000.
Hannon, Thomas W., to Hannon Electric Company. Wedge-type tensioning rail construction for electrically heated screens. 4,148,724, Cl. 209-403.000.
Hansen, Charles N. Protecting pavement materials against the effects of freezing and thawing of water or brine solutions. 4,148,938, Cl. 427-136.000.
Hanser, Paul E., to HWH Corporation. Process of and device for seating a ring type seal in a groove. 4,148,125, Cl. 29-451.000.
Hanson, Marlin M.: *See*—
Gorres, John M.; Hanson, Marlin M.; and Lund, Roger E., 4,149,265, Cl. 365-2.000.
Harada, Susumu; and Endo, Kunio, to Nippondenso Co., Ltd. Rotational speed detecting apparatus for electronically-controlled fuel injection systems. 4,148,283, Cl. 123-32.0EG.
Harada, Yuichi: *See*—
Shima, Keizo; Harada, Yuichi; and Ohya, Yoshinobu, 4,148,775, Cl. 260-30.80R.
Haraikawa, Tetsuo, to Tokico Ltd. Automatic shoe clearance adjusting device in shoe drum brake. 4,148,380, Cl. 188-79.50B.
Harbaugh, Ricky A. Automatic loading bong. 4,148,326, Cl. 131-173.000.
Hardesty, Edwin C., to Western Electric Company, Incorporated. Modular plug having superior dielectric strength for terminating cords. 4,148,539, Cl. 339-99.00R.
Harding, Norman B., to Goodyear Tire & Rubber Company, The. Tire building machine. 4,148,680, Cl. 156-403.000.
Hardy, Douglas A.: *See*—
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Harigaya, Isao; and Yamataka, Akihiro, to Canon Kabushiki Kaisha. Computer having circuitry for rounding-off insignificant digits. 4,149,261, Cl. 364-745.000.
Harrell, Robert C. Mobile insect collecting and destroying apparatus. 4,148,150, Cl. 43-144.000.
Harris Corporation: *See*—
Waters, Ronald S., 4,149,268, Cl. 365-95.000.
Harrison, Ronald A.; and Hutchings, Brian E., to Plessey Handel und Investments A.G. Ignition devices. 4,149,214, Cl. 361-256.000.
Hartke, David; and Sterling, Warren M., to Xerox Corporation. Fax processor. 4,149,145, Cl. 340-739.000.
Hartmann, Alfons; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. N-Methyl-N-(sulphonic acid amide-n'-sulphenyl)-carbamic acid esters. 4,148,910, Cl. 424-285.000.
Hartung, Kuhn & Co., Maschinenfabrik GmbH: *See*—
Schulte, Fritz; Riecker, Johann G.; and Schroter, Horst, 4,148,694, Cl. 202-262.000.
Harvel Industries Corp.: *See*—
Lundquist, James A., deceased, 4,148,443, Cl. 242-55.19A.
Harvel Industries Corp., assignee: *See*—
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Harwell, Roy M., Jr.; and Hill, Richard T., to Rhodes, Charles R. Hockey stick reinforcing method and product. 4,148,482, Cl. 273-67.00A.

Hashimoto, Mitsuru: *See—*
Ohta, Masafumi; Hashimoto, Mitsuru; and Kozima, Akio, 4,148,638, Cl. 96-1.50R.

Hashimoto, Takeshi: *See—*
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Hathaway, Thomas J., to United States of America, Energy. Solid feeder and method. 4,148,405, Cl. 414-207.000.

Hatuse, Toshikazu: *See—*
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Haude, Friedhelm: *See—*
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Hausberger, Helmut; and Schlosser, Peter, to Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen m.b.H. Method for the oxidation of values present in low valence stages and dissolved in liquids. 4,148,861, Cl. 423-3.000.

Hauser, Hans; and Violet, Jon A., to J. B. Foote Foundry Co., The. Cement mixer having a guard for gears. 4,148,589, Cl. 366-60.000.

Hauser, Raimund: *See—*
Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, 4,148,566, Cl. 352-27.000.

Haviv, Fortuna; and Patchornik, Abraham, to Yeda Research and Development Co., Ltd. 7-[Sulfomethyl)phenyl]acetamidocephalosporin derivatives. 4,148,997, Cl. 544-26.000.

Hayakawa, Hayashi: *See—*
Nishino, Atsushi; Hayakawa, Hayashi; and Yoshida, Akihiko, 4,148,131, Cl. 29-570.000.

Hayashi, Yoshimasa: *See—*
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Hayashida, Yoshihiro, to Tokico Ltd. Master cylinder. 4,148,190, Cl. 60-594.000.

Haybuster Manufacturing, Inc.: *See—*
Anderson, Joseph A., 4,148,278, Cl. 119-60.000.

Hayden, Douglas B., Jr.: *See—*
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Haydu, John L.: *See—*
Kussy, Frank W.; and Haydu, John L., 4,149,216, Cl. 361-357.000.

Hayes, Derek. Electrical coupling devices. 4,148,540, Cl. 339-99.00R.

Hayes, Edwin T.: *See—*
Goff, James E.; Hayes, Edwin T.; and Green, A. J. Seldon, 4,149,065, Cl. 219-365.000.

Haynes, Frederic S.: *See—*
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Heberlein Maschinenfabrik AG: *See—*
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Hebert, Raymond T.: *See—*
Idelsohn, Jerome M.; Mueller, Paul A.; Freedman, M. David; and Hebert, Raymond T., 4,149,089, Cl. 250-563.000.

Hedden, Walter A.: *See—*
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Hehner, Reinhard, to Jagenberg Werke AG. Gripping chuck for spools. 4,148,444, Cl. 242-68.200.

Heinzl, Joachim; Kattner, Erich; and Rosenstock, Guenther, to Siemens Aktiengesellschaft. Ink supply system for piezoelectrically operated printing jets. 4,149,172, Cl. 346-140.00R.

Heisler, William C., to Peelle Company, The. Automatic loader and unloader. 4,148,404, Cl. 414-259.000.

Heitzer, Xaver; Henseler, Gunther; and Sustmann, Hans, to Saint-Gobain Industries. Process and apparatus for the production of flat glass by the float glass method. 4,148,622, Cl. 65-99.00A.

Hekimian, Norris C.; and Kim, Chong-Soo. Method and apparatus for graphically displaying amplitude and phase jitter. 4,149,044, Cl. 179-175.30R.

Helena Rubinstein, Inc.: *See—*
Barnett, Gabriel; Gershaw, Nathan; and Mausner, Jack J., 4,148,875, Cl. 424-81.000.

Hemler, Charles L., Jr.; and Stine, Laurence O., to UOP Inc. Method of regenerating coke-contaminated catalyst with simultaneous combustion of carbon monoxide. 4,148,751, Cl. 252-419.000.

Henderson, Don J., to Exxon Research & Engineering Co. Polyparabanic acid/copper foil laminates obtained by direct solution casting. 4,148,969, Cl. 428-458.000.

Henehan, Patrick A.: *See—*
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Henkel Kommanditgesellschaft auf Aktien: *See—*
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Schwuger, Milan J.; Smolka, Heinz; and Rostek, Manfred, 4,148,603, Cl. 8-137.000.
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Henne, Manfred: *See—*
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Henreich, Gerhard: *See—*
Meurer, Hans; Jordans, Josef; and Henreich, Gerhard, 4,148,206, Cl. 72-239.000.

Henseler, Gunther: *See—*
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Herbert, Edward. Transparent or reflective panel. 4,148,563, Cl. 350-285.000.

Herbst, Joseph: *See—*
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Hercules Incorporated: *See—*
Putney, Richard K., 4,148,666, Cl. 106-288.00Q.
Younkin, Harry A., 4,148,187, Cl. 60-245.000.
Ziobrowski, Bernard G., 4,148,667, Cl. 106-288.00Q.

Herendi, Jozsef: *See—*
Csikos, Rezso; Balogh, Andras; Herendi, Jozsef; and Gregor, Katalin, nee Balogh, 4,148,959, Cl. 428-215.000.

Heritage Silversmiths Limited: *See—*
Mayer, Peter; Blair, Robert W.; and Zamin, Mohammed, 4,148,699, Cl. 204-129.850.
Mayer, Peter; Blair, Robert W.; and Zamin, Mohammed, 4,148,707, Cl. 204-297.00W.

Herman, Maynard A.: *See—*
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Herman, Robert W.; and Reins, Edward R., to United States of America, Navy. Digital plotting system for displaying curved line information. 4,149,165, Cl. 340-740.000.

Herman, Robert W.: *See—*
Reins, Edward R.; and Herman, Robert W., 4,149,164, Cl. 340-701.000.

Hesston Corporation: *See—*
Graber, Kurt; Yatcilla, George; and Fleming, Garold L., 4,148,254, Cl. 100-179.000.

Heugebaert, Frans C.: *See—*
Vuyts, Julius L.; Heugebaert, Frans C.; and Janssens, Wilhelmus, 4,148,659, Cl. 96-48.0HD.

Hewitt, John J. H. Lawn mower blade grinder. 4,148,158, Cl. 51-48.0HE.

Hewitt, John T. Diesel engine control means. 4,148,289, Cl. 123-140.0MC.

Hewlett-Packard Company: *See—*
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Hirata, Minoru: *See—*
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Nagae, Yoshiharu; and Kawakami, Hideaki, 4,149,151, Cl. 340-765.000.
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Back, Gunter, 4,148,474, Cl. 271-170.000.
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von Plessen, Helmold; and Bodenbenner, Kurt, 4,148,858, Cl. 422-12.000.

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Hofstetter, Edward G., Jr., to General Signal Corporation. Apparatus for making rheological measurements. 4,148,215, Cl. 73-54.000.

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Holder, Clinton H., to Exxon Research & Engineering Co. Catalytic refining process for tank bottoms wax. 4,148,711, Cl. 208-27.000.

Holladay, Thomas M., to Xerox Corporation. Variable angle electronic halftone screening. 4,149,194, Cl. 358-283.000.

Holland, Robert W. Internal thread gage. 4,148,146, Cl. 33-199.00R.

Hollar, Arthur W., Jr., to General Motors Corporation. Sunshade support assembly. 4,148,519, Cl. 296-97.00H.

Hollingsworth, Delbert L.; and Sharp, Vance R. Medicine management device. 4,148,273, Cl. 116-325.000.

Holmes, Thomas: *See*—
French, Tom; Holmes, Thomas; Mitchell, William F.; and Kenney, Michael J., 4,148,348, Cl. 152-379.100.

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Holter, Karl; Schrewe, Hans; Diederich, Gerd; and Pleschiutschnigg, Fritz P., to Mannesmann Aktiengesellschaft; and Gustav Wiegard Maschinenfabrik. Apparatus for measuring gap width of dual roller track. 4,148,145, Cl. 33-143.00L.

Holtgraver, Edward G., to Fisher Controls Company. Tight shutoff butterfly valve. 4,148,458, Cl. 251-148.000.

Holzner, Franz; Schmid, Ulrich; and Strittmatter, Kurt, to Siemens Aktiengesellschaft. Switching matrix with connection modules. 4,149,096, Cl. 307-115.000.

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Yahata, Haruki; Honda, Shunsuke; and Kawasaki, Tadamichi, 4,149,258, Cl. 364-724.000.

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Horton, Robert C., to Ultrafab, Inc. Air pervious weatherstrip. 4,148,953, Cl. 428-85.000.

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Lacis, Laimons; and Horvath, Steven, 4,149,130, Cl. 335-154.000.

Hose, Eddy, to Cubic Corporation. Sequentially balanced modulation tone ranging system and method. 4,149,168, Cl. 343-112.00D.

Houska, Karl H.; and Wernitz, Eberhard, to Siemens Aktiengesellschaft. Method and apparatus for adjusting electrical networks consisting of synthetic foils. 4,149,064, Cl. 219-121.0LM.

Howard, George A. System for storing and handling used cooking oils. 4,148,729, Cl. 210-104.000.

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Hrycik, Kenneth S., to General Electric Company. Power control system for electrically melting glass. 4,149,022, Cl. 13-6.000.

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Hughes, John; and Maul, Peter L., to American Colloid Company. Brick composition and method therefor. 4,148,662, Cl. 106-67.000.

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Ichiyanagi, Toshikazu, to Canon Kabushiki Kaisha. Motor control device for sound motion picture camera. 4,148,570, Cl. 352-180.000.

Idelsohn, Jerome M.; Mueller, Paul A.; Freedman, M. David; and Hebert, Raymond T., to Bendix Corporation, The. Electro-optical scanner for generating digital flaw data. 4,149,089, Cl. 250-563.000.

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Ikeguchi, Shigehiko; Usui, Noboru; and Yamashita, Norio, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Frequency synthesizer for transmitter receiver using a phase locked loop. 4,149,125, Cl. 331-1.00A.

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Imperial Chemical Industries Limited: *See*—
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Inabayashi, Akira; and Ninomiya, Harumi, to Toyo Kogyo Co., Ltd. Adjustable shaft bearing structure. 4,148,532, Cl. 308-36.000.
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Institute National de la Sante & de la Recherche Medicale (INSERM): *See*—
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Drake, Cyril F., 4,148,623, Cl. 71-32.000.
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Inventio AG: *See*—
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Ionescu, Alexandru D., to New England Machinery, Inc. Bottle-conveying apparatus. 4,148,390, Cl. 198-400.000.
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Jackson, Norman C.: *See*—
Paulus, Peter V.; and Jackson, Norman C., 4,148,961, Cl. 428-358.000.
Jacobs, Stephan J.; and Stuertzel, Alfonse. Axially balanced, adjustable volume rotary machine and drive system utilizing same. 4,148,249, Cl. 91-485.000.
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Jaskowski, Michael C. Process and composition for treating hair. 4,148,329, Cl. 132-7.000.
Jass, Wieland, to Siemens Aktiengesellschaft. Method and apparatus for producing a cross sectional image of a body. 4,149,250, Cl. 364-414.000.
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Jenkins, Stephen R.; Northrup, Thomas A.; and Stewart, Robert E., to Digital Equipment Corporation. Secondary storage facility for connecting to a digital data processing system by separate control information and data transfer paths. 4,149,239, Cl. 364-200.000.
Jensen, Donald W.; and Beckley, Addison S. Automobile body collision energy absorbing system. 4,148,505, Cl. 280-784.000.
Jepsen, Carl J.: *See*—
Fog, Ernst; and Jepsen, Carl J., 4,148,464, Cl. 254-150.0FH.
Jerabek, Robert D.: *See*—
Marchetti, Joseph R.; Zwack, Robert R.; and Jerabek, Robert D., 4,148,772, Cl. 260-29.2EP.

Jessup, Samuel A. Tree felling device. 4,148,462, Cl. 254-133.00R.

Jezek, Bruce W.; and McClung, Glen L., to United States of America, Army. Tool and method for assembling threaded burster retainer in a projectile. 4,148,126, Cl. 29-464.000.

John Fairfax & Sons Limited: *See—*
Palmer, Archibald E.; Macquart, Raymond G.; and Karaiste, Risto T. T., 4,149,187, Cl. 358-106.000.

John Wyeth & Brother Limited: *See—*
Crossley, Roger, 4,148,904, Cl. 424-270.000.

John Zink Company: *See—*
Reed, Robert D.; and Goodnight, Hershel E., 4,148,599, Cl. 431-11.000.

Johnson, Bruce K., to Polaroid Corporation. Sonar controlled two focal position lens system. 4,148,574, Cl. 354-195.000.

Johnson, Charles R.; Forlow, John K.; Black, Paul G.; Mitchell, William A.; and Clark, John S., to Ex-Cell-O Corporation. High speed spindle and draw bar assembly. 4,148,246, Cl. 90-11.00D.

Johnson Controls, Inc.: *See—*
Hilgert, Adolph J., 4,149,133, Cl. 336-30.000.

Johnson, Harold K. Apparatus for handling stacks of flat articles such as bag-forming tubes and for separating and delivering the same individually. 4,148,473, Cl. 271-20.000.

Johnson, Herbert J. Hydraulic trailer lift. 4,148,499, Cl. 280-490.00R.

Johnson, Matthey & Co., Limited: *See—*
Hydes, Paul C.; and Cleare, Michael J., 4,148,870, Cl. 424-3.000.

Johnson, Wynsel J.: *See—*
Kolnes, Kenneth O.; and Johnson, Wynsel J., 4,148,470, Cl. 269-101.000.

Jones, John L.: *See—*
Rubino, Andrew M.; Jones, John L.; and Bretschneider, Edward S., 4,148,812, Cl. 260-429.300.

Jordans, Josef: *See—*
Meurer, Hans; Jordans, Josef; and Henreich, Gerhard, 4,148,206, Cl. 72-239.000.

Julien, Hermann: *See—*
Neubeck, Kurt; and Julien, Hermann, 4,148,123, Cl. 29-407.000.

Jutte, Hans: *See—*
Stuckmann, Dieter; and Jutte, Hans, 4,148,592, Cl. 405-141.000.

Kaartinen, Niilo H., to Packard Instrument Company, Inc. Method for processing fluid materials particularly in the preparation of samples for radioactive isotope tracer studies. 4,148,608, Cl. 23-230.0PC.

Kabushiki Kaisha Daini Seikosha: *See—*
Ohara, Yuichi, 4,148,320, Cl. 128-419.0PG.

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Abe, Shuzo; Endo, Yukio; and Otsuki, Yoshito, 4,148,182, Cl. 58-16.00R.

Kabushiki Kaisha Suwa Seikosha: *See—*
Akahane, Yoshikazu; and Morozumi, Shinji, 4,148,184, Cl. 58-23.0AC.
Maezawa, Shuji, 4,148,180, Cl. 58-4.00A.

Kaenel, Reginald A.: *See—*
Smith-Vaniz, William R.; and Kaenel, Reginald A., 4,148,480, Cl. 273-54.00E.

Kageyama, Satoshi; Takeuchi, Keiji; and Ogi, Keisuke, to Tokyo Shibaura Electric Co., Ltd. Signal transmission system with an error control technique. 4,149,142, Cl. 340-146.1BA.

Kaiser, Bernd-Ulrich: *See—*
Danziger, Harry; Immel, Otto; Kaiser, Bernd-Ulrich; Rampart, Guido; and Schwarz, Hans-Helmut, 4,148,792, Cl. 260-239.30A.
Danziger, Harry; Deibele, Ludwig; and Kaiser, Bernd-Ulrich, 4,148,793, Cl. 260-239.30A.

Kaiser, Joachim: *See—*
Lattrell, Rudolf; Bartmann, Wilhelm; and Kaiser, Joachim, 4,148,895, Cl. 424-248.540.

Kaiser, Karl: *See—*
Kuxdorf, Bernhard; Kaiser, Karl; and Wesselmann, Rudolf, 4,148,990, Cl. 528-500.000.

Kalenda, Norman W.: *See—*
Green, James A., II; and Kalenda, Norman W., 4,148,641, Cl. 96-29.00D.

Kaltenbach & Voigt GmbH & Co.: *See—*
Gmeinder, Hermann, 4,149,094, Cl. 307-12.000.

Kalweit, Harvey W.: *See—*
Kochel, Leroy J.; Kalweit, Harvey W.; Gonzales, Arthur D.; Church, Clyde L.; and Ou-Yang, Paul H., 4,148,133, Cl. 29-571.000.

Kamata, Sachio; and Sekine, Kunio, to Dowa Mining Co., Ltd.; and Akita Zinc Co. Ltd. Apparatus for polishing cathode plates for metal electrolytic refinery. 4,148,108, Cl. 15-77.000.

Kamath, Venkatesh; Mookherjee, Braja D.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Intermediate for preparation of 2,3-dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-2-pentanol. 4,149,020, Cl. 568-838.000.

Kamath, Venkatesh: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,148,826, Cl. 260-586.00G.

Kaminsky, Didier: *See—*
Archambault, Yves; and Kaminsky, Didier, 4,149,126, Cl. 331-56.000.

Kammerhofer, Klaus, to Vereinigte Osterreichische Eisen- und Stahlwerk-Alpine Montan Aktiengesellschaft. Process for controlling a steel refining process for steels having a carbon content within the range of 0.1 to 0.8 % by weight. 4,148,629, Cl. 75-52.000.

Kanda, Mamoru; Ishiwata, Shousuke; Horiguchi, Masaji; Udagawa, Teruo; and Mii, Seihei, to Chichibu Cement Kabushiki Kaisha, and Daito Giken Kogyo Kabushiki Kaisha. Forced kneading mixer. 4,148,588, Cl. 366-56.000.

Kandl, Henry J.: *See—*
Phillips, James T.; and Kandl, Henry J., 4,148,122, Cl. 29-401.00E.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Yamada, Hideaki; Takahashi, Satomi; Sumino, Kazushige; Fukumitsu, Hirotaka; and Yoneda, Koji, 4,148,688, Cl. 195-29.000.

Kaneko, Yoshikazu: *See—*
Kubota, Tomio; Kojima, Akio; and Kaneko, Yoshikazu, 4,148,637, Cl. 96-1.50N.

Kaneshiro, Tetuya; and Tanabe, Takeshi, to Sharp Kabushiki Kaisha. Microwave oven with food temperature-sensing means. 4,149,056, Cl. 219-10.55R.

Kannengiesser, Marie-Helene: *See—*
Nedelec, Lucien; Pierdet, Andre; Dumont, Claude; and Kannengiesser, Marie-Helene, 4,148,919, Cl. 424-33.00D.

Kantner, Otto: *See—*
Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, 4,148,566, Cl. 352-27.000.

Kanzaki Kokyukoki Mfg. Co., Ltd.: *See—*
Yamaoka, Kojiro; Azuma, Toshiro; and Fujisaki, Koichiro, 4,148,382, Cl. 192-4.00A.

Karaiste, Risto T. T.: *See—*
Palmer, Archibald E.; Macquart, Raymond G.; and Karaiste, Risto T. T., 4,149,187, Cl. 358-106.000.

Karashima, Masashi. Defroster arrangement in a refrigerating showcase. 4,148,197, Cl. 62-256.000.

Karbo, Richard S., to Hydro-Rain, Inc. Automatic controller. 4,149,045, Cl. 200-37.00R.

Karl, Robert D.; and Reid, William R., Jr., to Amtel, Inc. Mooring buoy. 4,148,107, Cl. 9-8.00P.

Karsay, Bela I.: *See—*
Sturtevant, Robert L.; Karsay, Bela I.; and Gancy, Alan B., 4,148,836, Cl. 260-683.620.

Kashiwagi, Hiroshi: *See—*
Yamashita, Mikio; and Kashiwagi, Hiroshi, 4,149,077, Cl. 250-423.00P.

Kasper, Richard F.; and Carvalko, Joseph R. Urinary retention catheter. 4,148,319, Cl. 128-349.00B.

Kasuga, Muneo: *See—*
Nishikawa, Masaji; and Kasuga, Muneo, 4,148,577, Cl. 355-35.00C.

Kataoka, Koju: *See—*
Sumi, Akira; and Kataoka, Koju, 4,149,256, Cl. 364-602.000.

Katayama, Shigenari: *See—*
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 4,148,796, Cl. 546-199.000.

Kattner, Erich: *See—*
Heinzl, Joachim; Kattner, Erich; and Rosenstock, Guenther, 4,149,172, Cl. 346-140.00R.

Kaufman, Larry L., Sr. Solar radiation energy concentrator. 4,148,300, Cl. 126-271.000.

Kautetzky, Anton, to Kraftwerk Union Aktiengesellschaft. Transport and assembly apparatus for screw-tightening devices. 4,148,401, Cl. 414-590.000.

Kawakami, Hideaki: *See—*
Nagae, Yoshiharu; and Kawakami, Hideaki, 4,149,151, Cl. 340-765.000.

Kawamura, Siyoutaro; Ueda, Mitsuru; and Imaeda, Makoto, to Nippondenso Co., Ltd. Electromagnetic relay. 4,149,131, Cl. 335-202.000.

Kawano, Hideo; Dietrich, Oelschlagel; Nakata, Katumi; and Yamaji, Kenkichi, to Hitachi Cable, Ltd. Flame spraying materials and process for producing the same. 4,148,971, Cl. 428-558.000.

Kawasaki, Tadamichi: *See—*
Yahata, Haruki; Honda, Shunsuke; and Kawasaki, Tadamichi, 4,149,258, Cl. 364-724.000.

Kawasaki Yukoh Kabushiki Kaisha: *See—*
Bessho, Michio, 4,148,209, Cl. 72-441.000.

Kawase, Yosio: *See—*
Ohiwa, Tadaaki; and Kawase, Yosio, 4,148,706, Cl. 204-245.000.

Kazmierowicz, Casimir W., to Beckman Instruments, Inc. Conductor compositions comprising aluminum, silicon and glass. 4,148,761, Cl. 252-512.000.

Kehren, Jean-Paul A.; and Ousset, Robert A., to Societe Nationale des Poudres et Explosifs. Ternary explosive compositions. 4,148,674, Cl. 149-2.000.

Kellen, Robert A., to Motorola, Inc. Piezoelectric monolithic crystal element having improved response. 4,149,102, Cl. 310-320.000.

Keller, John H.: *See—*
Arndt, Herbert L., deceased; Arndt, Margaret L., administratrix; Keller, John H.; McKenna, Charles M.; and Winnard, James R., 4,149,084, Cl. 250-492.00A.

Keller, Richard A.: *See—*
Green, Robert B.; Keller, Richard A.; Luther, Gabriel G.; Schenck, Peter C.; and Travis, John C., 4,148,586, Cl. 356-318.000.

Kells, John D. Refrigerator temperature controls. 4,148,194, Cl. 62-3.000.

Kelly, Timm L., to Amchem Products, Inc. Coating solution for metal surface. 4,148,670, Cl. 148-6.15R.

Kelp, Fritz: *See—*
Stoll, Alfred; and Kelp, Fritz, 4,148,281, Cl. 122-32.000.

Kendall, James M.: *See—*
United States of America, National Aeronautics and Space Administration; and Kendall, James M., 4,149,034, Cl. 179-1.0MF.

Kenmochi, Hirohito: *See*—
Sueda, Yoshihisa; Koumura, Suketsugu; Hirabayashi, Kazuyoshi; Kenmochi, Hirohito; Terao, Hisashige; and Mori, Yoshio, 4,148,790, Cl. 260-146.00T.

Kennecott Copper Corporation: *See*—
Agarwal, Jagdish C.; Giberti, Richard A.; and Petrovic, Louis J., 4,148,615, Cl. 55-73.000.
Rappas, Alkis S.; and Pemsler, J. Paul, 4,148,813, Cl. 260-439.00R.
Rappas, Alkis S.; and Pemsler, J. Paul, 4,148,815, Cl. 260-439.00R.
Rappas, Alkis S.; and Pemsler, J. Paul, 4,148,816, Cl. 260-439.00R.

Kennedy, Carl D.; and Nicks, Gene E., to Continental Oil Company. Preparation of synthetic hydrocarbon lubricants. 4,148,834, Cl. 260-671.00B.

Kennedy, Richard W.; and Tefft, Edward G., to General Electric Company. Glass passivated gold diffused rectifier pellet and method for making. 4,148,672, Cl. 148-33.500.

Kenney, Michael J.: *See*—
French, Tom; Holmes, Thomas; Mitchell, William F.; and Kenney, Michael J., 4,148,348, Cl. 152-379.100.

Kerko, David J.; and Seward, Thomas P., III, to Corning Glass Works. Photochromic sheet glass compositions and method. 4,148,661, Cl. 106-54.000.

Kern, Lawrence G.: *See*—
Bustos, Rafael T.; Taylor, William B.; Davis, Charles L.; and Kern, Lawrence G., 4,148,533, Cl. 312-223.000.

Kern, Winfried; and Valentin, Wilhelm, to Hoechst Aktiengesellschaft. Method and arrangement for the automatic observation of interfacial phenomena. 4,149,255, Cl. 364-524.000.

Kernforschungsanlage Julich Gesellschaft m. beschrankter Haftung: *See*—
Forster, Siegfried; and Kleemann, Manfred, 4,148,357, Cl. 165-140.000.

Kessler, Richard V.: *See*—
Lee, Kung-You; Kessler, Richard V.; and Kokturk, Uygur, 4,148,695, Cl. 203-63.000.

Keystone Consolidated Industries, Inc.: *See*—
Carlson, Reuben E.; and Amdal, Dagfinn O., 4,148,454, Cl. 248-221.300.

Keystone Lighting Corp.: *See*—
Dalton, John, 4,149,226, Cl. 362-216.000.

Kieninger & Obergfell, Fabrik fur Technische Laufwerke und Apparate: *See*—
Scheer, Erich, 4,148,181, Cl. 58-13.000.

Kies, Walter, to Eckardt AG. Connection element for electric cable connections. 4,148,545, Cl. 339-184.00M.

Kikuma, Toshio: *See*—
Midzutani, Wataru; Kikuma, Toshio; Nakajima, Koe; and Sasahira, Seiichi;, 4,148,426, Cl. 228-146.000.

Kim, Chong-Soo: *See*—
Hekimian, Norris C.; and Kim, Chong-Soo, 4,149,044, Cl. 179-175.30R.

Kimball, Stephen F.: *See*—
Gates, Paul E.; and Kimball, Stephen F., 4,149,103, Cl. 313-315.000.

Kindig, Alan L., to General Electric Company. Apparatus for use in making electrical interconnections. 4,148,137, Cl. 29-732.000.

King, James H., to Aine, Harry E., a part interest. Composite horticultural system. 4,148,154, Cl. 47-58.000.

King, William G.; and Spector, George. Instant savior. 4,149,224, Cl. 362-157.000.

Kinsler, James W. Multi-port valve. 4,148,460, Cl. 251-206.000.

Kirchmann, Hans: *See*—
Brand, Peter; Haefner, Guenther; Diedrich, Fritz; and Kirchmann, Hans, 4,148,523, Cl. 297-55.000.

Kirk, George R.: *See*—
Cease, Vincent J.; and Kirk, George R., 4,148,740, Cl. 252-33.200.

Kirkbride, Chalmer G. Process for removing sulfur from coal. 4,148,614, Cl. 44-1.00R.

Kishi, Shoichi; Fukuzaki, Takaharu; and Nagaoka, Yukio, to Hitachi, Ltd. Apparatus for displaying plant data. 4,149,155, Cl. 340-524.000.

Kishino, Takao, to Futaba Denshi Kogyo K.K. Luminescent character display device. 4,149,147, Cl. 340-760.000.

Kistler Instrumente AG: *See*—
Calderara, Reto, 4,148,530, Cl. 310-361.000.

Kjaer, Ian: *See*—
Mortensen, Niels E.; Christiansen, Bent E.; and Kjaer, Ian, 4,148,238, Cl. 83-152.000.

Kleemann, Manfred: *See*—
Forster, Siegfried; and Kleemann, Manfred, 4,148,357, Cl. 165-140.000.

Klein, Arthur H.: *See*—
Burdick, Kenneth J.; Hand, Wilfred L.; Klein, Arthur H.; and Neal, Charles B., 4,149,181, Cl. 358-31.000.

Klein, David A., to Du Pont de Nemours, E. I., and Company. Process for purifying 1,12-dodecanedioic acid. 4,149,013, Cl. 562-593.000.

Klemmensen, Daniel F.; and Bauer, Richard G., to Goodyear Tire & Rubber Company, The. Aqueous gels. 4,148,746, Cl. 252-316.000.

Klemmensen, Per D.: *See*—
Madsen, Hans B.; Klemmensen, Per D.; and Kolind-Andersen, Hans, 4,148,901, Cl. 424-263.000.

Klitsov, Alexandr A.: *See*—
Korjukin, Alexandr V.; Vesnitskaya, Galina S.; Gerasimova, Elena M.; Gudimov, Matvei M.; Markina, Emma F.; Klitsov, Alexandr A.; Kovtun, Alexandr T.; Beriev, Georgy M.; and Vasilchenko, Viktor L., 4,148,939, Cl. 427-164.000.

Klockner-Humboldt-Deutz AG: *See*—
Eisenhauer, Rudolf; Haas, Helmut; Haude, Friedhelm; and Greifenberg, Jurgen, 4,148,440, Cl. 241-54.000.

Kluczynski, Achim; and Altmann, Erik, to AGFA-Gevaert AG. Photographic film cassette incorporating a film lock. 4,148,449, Cl. 242-71.200.

Kluender, Harold C.: *See*—
Woessner, Warren D.; Sih, Charles J.; Kluender, Harold C.; Arndt, Henry C.; and Biddlecom, William G., 4,149,017, Cl. 568-665.000.

Knaggs, Edward A.: *See*—
Nussbaum, Marvin L.; and Knaggs, Edward A., 4,148,821, Cl. 260-505.00S.

Knap, Joseph, to Canadair Limited. Cant rail and side cover combination for passenger vehicle. 4,148,515, Cl. 296-187.000.

Kniepkamp, Alberto: *See*—
Moore, Douglas R.; and Kniepkamp, Alberto, 4,148,240, Cl. 84-1.220.

Knorreck, Peter, to Robert Bosch GmbH. Centrifugal regulator system for fuel injection combustion engines. 4,148,290, Cl. 123-140.00R.

Knowles, Daniel H.; and Lock, William E., to Corning Glass Works. Apparatus for applying tensile stress to fiber. 4,148,218, Cl. 73-829.000.

Kobayashi, Juichi: *See*—
Satoh, Mitsuo; Miyagawa, Norio; and Kobayashi, Juichi, 4,148,967, Cl. 428-416.000.

Kobayashi, Minoru; and Nemoto, Shigeru, to Olympus Optical Co., Ltd. Tape recorder. 4,149,203, Cl. 360-60.000.

Kobayashi, Morio: *See*—
Fujiwhara, Mitsuto; Sasaki, Takashi; Uchida, Takashi; and Kobayashi, Morio, 4,148,656, Cl. 96-100.00R.

Kobayashi, Toshio: *See*—
Kodama, Masayuki; and Kobayashi, Toshio, 4,148,230, Cl. 74-859.000.

Kobelt, Volkmar. Self-closing fastener. 4,148,115, Cl. 24-201.00R.

Koch, Karlheinz; and Scheuermann, Fanny, to Henkel Kommanditgesellschaft auf Aktien. Cosmetic cleaning agents containing betaines and process. 4,148,762, Cl. 252-544.000.

Koch, Kenneth F.: *See*—
Wessler, Louis E.; and Koch, Kenneth F., 4,149,190, Cl. 358-174.000.

Koch, Michel G.; and Peyroux, Jacques M., to Societe d'Etudes et de Recherches Enzymologiques et pharmacologiques - Enzypha. N-oxy-ajmaline and the use thereof in treating cardiovascular disorders. 4,148,898, Cl. 424-256.000.

Kochel, Leroy J.; Kalweit, Harvey W.; Gonzales, Arthur D.; Church, Clyde L.; and Ou-Yang, Paul H., to Sperry Rand Corporation. Polysilicon mask for etching thick insulator. 4,148,133, Cl. 29-571.000.

Koci, Paul F.: *See*—
Laumbach, Dallas D.; and Koci, Paul F., 4,148,359, Cl. 166-261.000.

Koczak, Steven: *See*—
Pettinato, F. Edward; Herman, Maynard A.; and Koczak, Steven, 4,148,925, Cl. 426-235.000.

Kodama, Masayuki; and Kobayashi, Toshio, to Fuji Heavy Industries Co., Ltd. Emission control system dependent upon transmission condition in a motor vehicle. 4,148,230, Cl. 74-859.000.

Koehring Canada Limited: *See*—
Kurelek, John, 4,148,526, Cl. 298-8.00R.

Koernig, Wolfgang: *See*—
Hoffmann, Herwig; Graefje, Heinz; Koernig, Wolfgang; and Winderl, Siegfried, 4,148,824, Cl. 260-585.00B.

Kohama, Tokio; Obayashi, Hideki; Ozaki, Tadashi; and Nohira, Hidetaka, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system for an internal combustion engine. 4,148,286, Cl. 123-119.00A.

Kohlhagen, Walter. Random selection apparatus. 4,148,488, Cl. 273-146.000.

Kohsaka, Osamu: *See*—
Okamoto, Michio; Washizawa, Shigetaka; and Kohsaka, Osamu, 4,149,036, Cl. 179-15.0BT.

Koike, Shigeki: *See*—
Iwaoka, Takeshi; and Koike, Shigeki, 4,149,158, Cl. 340-568.000.

Kojima, Akio: *See*—
Kubota, Tomio; Kojima, Akio; and Kaneko, Yoshikazu, 4,148,637, Cl. 96-1.50N.

Kojima, Gen: *See*—
Morozumi, Mituharu; Kojima, Gen; and Abe, Takeshi, 4,148,982, Cl. 526-58.000.

Kojima, Toshitake: *See*—
Ogawa, Masanobu; and Kojima, Toshitake, 4,148,822, Cl. 562-534.000.

Kojima, Yasuyuki: *See*—
Sato, Kunio; and Kojima, Yasuyuki, 4,149,171, Cl. 346-1.000.

Kokturk, Uygur: *See*—
Lee, Kung-You; Kessler, Richard V.; and Kokturk, Uygur, 4,148,695, Cl. 203-63.000.

Kokusai Denshin Denwa Co., Ltd.: *See*—
Wada, Tasaku; Aoki, Ren; and Fujiwara, Mitsugu, 4,149,196, Cl. 358-286.000.
Yuguchi, Hiroshi; Nunokawa, Makoto; and Nakai, Taiichiro, 4,149,039, Cl. 179-15.55R.

Kolb, Gustav: *See*—
Bardenheuer, Friedrich; and Kolb, Gustav, 4,148,221, Cl. 73-425.40R.

Kolind-Andersen, Hans: *See—*
Madsen, Hans B.; Klemmensen, Per D.; and Kolind-Andersen, Hans, 4,148,901, Cl. 424-263.000.

Kolnes, Kenneth O.; and Johnson, Wynsel J., to Greenlee Bros. & Co. Workpiece pallet with distortion free clamping means. 4,148,470, Cl. 269-101.000.

Kolpak, Jan: *See—*
Gierek, Adam; Bajka, Lech; and Kolpak, Jan, 4,148,942, Cl. 427-241.000.

Komatsu, Yasutoshi: *See—*
Murakami, Yoshikazu; and Komatsu, Yasutoshi, 4,149,127, Cl. 331-96.000.

Kondoh, Syunichi; Matsufuji, Akihiro; Umehara, Akira; Sato, Akira; and Ogawa, Akira, to Fuji Photo Film Co., Ltd. Photopolymerizable composition comprising multi-photoinitiator system. 4,148,658, Cl. 96-115.00P.

Konig, Fritz: *See—*
Paar, Alois; and Konig, Fritz, 4,149,253, Cl. 364-505.000.

Konishi, Susumu, to International Business Machines Corporation. Discrimination of bubble state by bubble collapse. 4,149,266, Cl. 365-7.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Fujiwhara, Mitsuto; Sasaki, Takashi; Uchida, Takashi; and Kobayashi, Morio, 4,148,656, Cl. 96-100.00R.
Ohta, Hideyasu; and Mayama, Masayoshi, 4,148,644, Cl. 96-39.000.
Sawano, Hiroshi, 4,148,562, Cl. 350-255.000.

Konnemann, Alfred, to Grote & Hartmann GmbH & Co. KG. Flat safety fuse. 4,149,137, Cl. 337-295.000.

Kopac, Jordan J.: *See—*
LaBar, Russell A.; and Kopac, Jordan J., 4,148,777, Cl. 260-37.00N.

Kopplin, Horst, to Siemens Aktiengesellschaft. Disconnect switch for metal-encapsulated high-voltage switching installations. 4,149,054, Cl. 200-318.000.

Korber, Guntram, to Messer Griesheim GmbH. Lance for the flush gas treatment of non-ferrous molten metals. 4,148,468, Cl. 266-225.000.

Korjukin, Alexandr V.; Vesnitskaya, Galina S.; Gerasimova, Elena M.; Gudimov, Matvei M.; Markina, Emma F.; Klitsov, Alexandr A.; Kovtun, Alexandr T.; Beriev, Georgy M.; and Vasilchenko, Viktor L. Method of manufacturing a transparent body having a predetermined opacity gradient. 4,148,939, Cl. 427-164.000.

Kortnev, Vyacheslav P.: *See—*
Nudelman, Boris I.; Lisbaron, Vitaly I.; Kortnev, Vyacheslav P.; Sharova, Valentina P.; Imangulov, Vakel K.; and Afanasiev, Anatoly I., 4,148,620, Cl. 55-403.000.

Kos, Steven; and Baraff, David R., to Northern Telecom Limited. Direct imaging apparatus for an electronic document transmitter utilizing a linear array of photo-detectors. 4,149,197, Cl. 358-294.000.

Koski, William E.: *See—*
Wagenknecht, Austin C., deceased; Daravingas, George V.; and Koski, William E., 4,148,872, Cl. 424-48.000.

Kothmann, Richard E.; and Whirlow, Donald K., to Elect Power Research Institute, Inc. Vaporization-cooled electrical apparatus. 4,149,134, Cl. 336-57.000.

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Sueda, Yoshihisa; Koumura, Suketsugu; Hirabayashi, Kazuyoshi; Kenmochi, Hirohito; Terao, Hisashige; and Mori, Yoshio, 4,148,790, Cl. 260-146.00T.

Kovtun, Alexandr T.: *See—*
Korjukin, Alexandr V.; Vesnitskaya, Galina S.; Gerasimova, Elena M.; Gudimov, Matvei M.; Markina, Emma F.; Klitsov, Alexandr A.; Kovtun, Alexandr T.; Beriev, Georgy M.; and Vasilchenko, Viktor L., 4,148,939, Cl. 427-164.000.

Kowalski, Gunter, to U.S. Philips Corporation. Transversal filter for convoluted image reconstruction. 4,149,259, Cl. 364-724.000.

Kozima, Akio: *See—*
Ohta, Masafumi; Hashimoto, Mitsuru; and Kozima, Akio, 4,148,638, Cl. 96-1.50R.

Kozlowska, Halina; Zadernowski, Ryszard; Chodkowska-Lossow, Bozena; Bogaczynski, Kazimierz; and Szebiotko, Kazimierz, to Akademia Rolniczo-Techniczna; and Akademia Rolnicza. Method for obtaining concentrated proteins from the rape seeds, and the set of equipment for embodying this method. 4,148,789, Cl. 260-123.500.

Krafft, Werner: *See—*
von Bonin, Wulf; Wolff, Erich; Krafft, Werner; and Matschke, Gunther, 4,148,653, Cl. 96-77.000.

Kraft, Robert W., to United States of America, Navy. Flexible printed circuit board assembly. 4,149,219, Cl. 361-386.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Kautetzky, Anton, 4,148,401, Cl. 414-590.000.
Stoll, Alfred; and Kelp, Fritz, 4,148,281, Cl. 122-32.000.

Kramer, Rodney C.: *See—*
Andersen, Paul R.; and Kramer, Rodney C., 4,149,129, Cl. 335-21.000.

Kregoski, Robert S. Refrigeration charging and sealing device. 4,148,198, Cl. 62-292.000.

Kreighbaum, William E.; Matier, William L.; and Roth, Herbert R., to Mead Johnson & Company. Indolyl cyanomethylphenethanolamines. 4,148,908, Cl. 424-274.000.

Kresic, Richard K.: *See—*
Woehr, Theodore P.; Kresic, Richard K.; and Sheppard, James S., 4,148,242, Cl. 84-385.00R.

Kreutz, Werner; Henne, Manfred; and Fritz, Jurgen, to M. Braun GmbH. Location-sensitive proportional counter tube. 4,149,109, Cl. 315-58.000.

Kroder, Ernest A.: *See—*
McCandless, William; Leu, Robert F.; Kroder, Ernest A.; and Tomecek, Charles J., 4,148,161, Cl. 51-215.0CP.

Kronk, Richard E., to Combustion Engineering, Inc. Ultrasonic transmission device. 4,149,139, Cl. 340-3.00R.

Kropsch, Dieter: *See—*
Bracke, Pieter; Forker, Dieter; and Kropsch, Dieter, 4,148,117, Cl. 29-25.160.

Krukover, Pavel I.: *See—*
Pevzner, Mark G.; Pinchuk, Nikolai I.; Krukover, Pavel I.; and Lemchuzhnikov, Nikolai K., 4,149,138, Cl. 337-372.000.

Kubota, Tomio; Kojima, Akio; and Kaneko, Yoshikazu, to Ricoh Co., Ltd. Silane coupling agent in protective layer of photoconductive element. 4,148,637, Cl. 96-1.50N.

Kuhle, Engelbert: *See—*
Hartmann, Alfons; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,148,910, Cl. 424-285.000.

Kulabukhov, Vadim A.; Allakhverdov, Eduvard R.; Perlin, Boris A.; Shteinberg, Grigory S.; Afanasiev, Anatoly I.; Sheludko, Valentin V.; Nudelman, Boris I.; Volkov, Valery G.; Salomasov, Vasily F.; and Startsev, Jury V., to Gosudarstvenny Vsesojuzny Nauchno-Issledovatelsky Institut Tsementnoi Promyshlennosti. Flexible cam system for actuating mechanisms mounted on a revolving assembly. 4,148,601, Cl. 432-109.000.

Kulick, Russell J.; and Moore, Sewell T., to American Cyanamid Company. Rosin dispersions of improved stability. 4,148,665, Cl. 106-236.000.

Kurachi, Hisashi; Sakamoto, Yoshihiro; Tsuchiya, Kaichi; Yamakami, Hiroshi; Miyamae, Tatsuo; and Tomari, Seiji, to Canon Kabushiki Kaisha. Process for fixing a toner image. 4,148,937, Cl. 427-194.000.

Kuramochi, Koujiro; Watanabe, Kazuaki; and Terakura, Yukio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Overdrive device for automatic transmission. 4,148,229, Cl. 74-801.000.

Kuraray Co., Ltd.: *See—*
Narukawa, Hiroshi; Takeuchi, Yasuhira; Saito, Koichi; and Ohfuji, Yoshio, 4,148,781, Cl. 260-42.510.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Mizuno, Toshio; and Murakami, Heiichiro, 4,149,023, Cl. 13-7.000.

Kurelek, John, to Koehring Canada Limited. Apparatus for sorting trees. 4,148,526, Cl. 298-8.00R.

Kusaka, Yukio: *See—*
Watanabe, Akira; Kusaka, Yukio; and Sasaki, Shigeo, 4,148,165, Cl. 52-122.000.

Kushkova, Natalia G.: *See—*
Farafontov, Vladimir I.; Sokhor, Mirra I.; Kushkova, Natalia G.; Digonsky, Viktor V.; and Lysanov, Vladislav S., 4,148,863, Cl. 423-290.000.

Kussy, Frank W.; and Haydu, John L., to Gould Inc. Fused unitized combination starter. 4,149,216, Cl. 361-357.000.

Kusumoto, Katsuhiro: *See—*
Hirooka, Shikou; Mitsusono, Tetsuyoshi; Hashimoto, Takeshi; and Kusumoto, Katsuhiro, 4,149,105, Cl. 313-496.000.

Kutzschebauch, Gerhard, to System Schultheis GmbH & Co. Warp beam transport carriage for twin warp beams. 4,148,406, Cl. 414-458.000.

Kuxdorf, Bernhard; Kaiser, Karl; and Wesselmann, Rudolf, to Hoechst Aktiengesellschaft. Continuous removal of monomers from an aqueous dispersion of a polymer. 4,148,990, Cl. 528-500.000.

Kwon, Joon T.: *See—*
Gelbein, Abraham P.; and Kwon, Joon T., 4,148,865, Cl. 423-358.000.

Kyushu Taikarenga Kabushiki Kaisha: *See—*
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La Mesa Industries, Inc.: *See—*
Dashew, Stephen S., 4,148,852, Cl. 264-33.000.

LaBar, Russell A.; and Kopac, Jordan J., to Delta Oil Products Corporation. Binder for foundry process. 4,148,777, Cl. 260-37.00N.

Lacis, Laimons; and Horvath, Steven, to Gordos Corporation. Miniature mercury contact reed switch construction. 4,149,130, Cl. 335-154.000.

Lacy, John P., to United States Steel Corporation. Plate quenching method. 4,148,673, Cl. 148-153.000.

Lamb, Sydney M.; and Smith, Randall C., to Semionics Associates. Associative memory device with variable recognition criteria. 4,149,262, Cl. 364-900.000.

Lamb, Terrence R., to Art Products, Inc. Portable drawing board. 4,148,506, Cl. 281-45.000.

Lambert, Clifford L., Jr.: *See—*
Watts, Lewis W., Jr.; Lambert, Clifford L., Jr.; and Marquis, Edward T., 4,148,819, Cl. 260-453.0AL.

Lamont, James; and Braun, Robert J., to Emery Industries, Inc. Copolyesters useful in blood separation assemblies. 4,148,764, Cl. 260-22.00D.

Lane, John J.: *See—*
Croft, Edward F. B.; and Lane, John J., 4,148,600, Cl. 432-8.000.

Lane, Maxwell J., to Nylex Corporation Limited. Treatment of coated fabric scrap. 4,148,702, Cl. 204-159.120.

Lang, Andre: *See—*
Marie, Gilbert; Lang, Andre; and Chapelet, Gilbert, 4,148,845, Cl. 260-878.00R.

Lang, Georg: *See—*
Foelix, Heinz D.; and Lang, Georg, 4,148,377, Cl. 187-52.0LC.

Langan, Marion J., to Avco Corporation. High common mode relay multiplexer. 4,149,037, Cl. 179-15.0BL.

Langdon, Glen G., Jr.: *See*—
Giddings, Gary M.; Langdon, Glen G., Jr.; Malowany, Alfred S.; and Williams, Robin, 4,149,184, Cl. 358-81.000.
Langer, Arthur W., Jr., to Exxon Research & Engineering Co. Novel trialkyl aluminum cocatalyst. 4,148,756, Cl. 252-429.00B.
Langguth, Robert P.: *See*—
Crutchfield, Marvin M.; Langguth, Robert P.; and Mayer, James M., 4,148,742, Cl. 252-102.000.
Lankard, David R.; and Hedden, Walter A., to PMCMA Research Group. Plaster molding composition. 4,148,660, Cl. 106-38.300.
Lankinen, Matti: *See*—
Surakka, Jorma; and Lankinen, Matti, 4,148,722, Cl. 209-211.000.
Larsen, George E., to Northrop Corporation. Apparatus and method for pressure molding composite structural parts. 4,148,597, Cl. 425-389.000.
Larson, Charles; Van Nocker, Melvin; and Sutton, Robert, to PRAB Conveyors, Inc. Viscid material conveyor. 4,148,392, Cl. 198-498.000.
Larson, Ralph. Simulated ski slope slide structure. 4,148,477, Cl. 272-56.5SS.
Lattrell, Rudolf; Bartmann, Wilhelm; and Kaiser, Joachim, to Hoechst Aktiengesellschaft. Basically substituted indole derivatives. 4,148,895, Cl. 424-248.540.
Laumbach, Dallas D.; and Koci, Paul F., to Shell Oil Company. Pressure-balanced oil recovery process for water productive oil shale. 4,148,359, Cl. 166-261.000.
Lauria, Francesco: *See*—
Doria, Gianfederico; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, 4,148,900, Cl. 424-263.000.
Lavagnino, Edward R.: *See*—
Day, William A.; and Lavagnino, Edward R., 4,148,809, Cl. 260-345.300.
Laval, Claude C., Jr. Separator for use in boreholes of limited diameter. 4,148,735, Cl. 210-512.00R.
Lavallee, Pierre A.: *See*—
Crean, Peter A.; Lavallee, Pierre A.; and Agulnek, Martin A., 4,149,091, Cl. 250-566.000.
Leach, Sam L. High efficiency energy transfer technique. 4,148,701, Cl. 204-157.10R.
LeBlanc, Destin A.; and LeBlanc, Robert B., to LeBlanc Research Corporation. Phosphoramide-hydroxymethyl phosphine condensation products for textile fire retardation. 4,148,602, Cl. 8-115.700.
LeBlanc Research Corporation: *See*—
LeBlanc, Destin A.; and LeBlanc, Robert B., 4,148,602, Cl. 8-115.700.
LeBlanc, Robert B.: *See*—
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Leccese, Vincent L., to Standard Container Company. Method of making dripless metal can nozzle. 4,148,269, Cl. 113-116.0DD.
Lechner, Manfred: *See*—
Butter, Karl; Lechner, Manfred; and Stich, Kurt, 4,148,121, Cl. 29-157.00C.
Lee, Kung-You; Kessler, Richard V.; and Kokturk, Uygur, to Texaco Inc. Preparation and recovery of ethers. 4,148,695, Cl. 203-63.000.
Lee, Zion S.: *See*—
Swarts, John M.; and Lee, Zion S., 4,148,769, Cl. 260-25.000.
Leinemann, Hubert, to Braunschweiger Flammenfilter Leinemann & Co. Pilot controlled membrane valve. 4,148,336, Cl. 137-491.000.
Leiser, Daniel B.: *See*—
United States of America, National Aeronautics and Space Administration; Leiser, Daniel B.; Goldstein, Howard E.; and Smith, Marnell, 4,148,962, Cl. 428-366.000.
Lemchuzhnikov, Nikolai K.: *See*—
Pevzner, Mark G.; Pinchuk, Nikolai I.; Krukover, Pavel I.; and Lemchuzhnikov, Nikolai K., 4,149,138, Cl. 337-372.000.
Lemelson, Jerome H. Electro-optical circuits and manufacturing. 4,149,088, Cl. 250-551.000.
Lemkey, Franklin D.: *See*—
Morris, James G.; and Lemkey, Franklin D., 4,148,671, Cl. 148-11.50A.
Lents, James M.; and Rhodes, Barry V., Sr. Solar energy receptor apparatus. 4,148,293, Cl. 126-270.000.
Leopold Kostal, Firma: *See*—
Winter, Friedhelm; Buhle, Klaus; and Eifer, Ralf, 4,149,048, Cl. 200-61.540.
Lepisto, J. George, to Champion International Corporation. Collapsible handle for multi-wall bag. 4,148,431, Cl. 229-54.00R.
Lerman, Victor, to Martin Yale Industries, Inc. Target with score indicator. 4,148,555, Cl. 273-26.00A.
Lesokhin, Albert Z.; Semenov, Mikhail R.; and Daikhovskaya, Evelina A. Arrangement for locking slot wedges retaining electric windings. 4,149,101, Cl. 310-214.000.
Leu, Robert F.: *See*—
McCandless, William; Leu, Robert F.; Kroder, Ernest A.; and Tomecek, Charles J., 4,148,161, Cl. 51-215.0CP.
Lever Brothers Company: *See*—
Duin, Hendrik J.; van Dam, Antonius F.; and Rek, Johannes H. M., 4,148,930, Cl. 426-603.000.
Levitt, Herbert, to Warnaco, Inc. Hanger. 4,148,421, Cl. 223-87.000.
Lewis, John T. Fruit and vegetable peeling machine having a rotary drum. 4,148,252, Cl. 99-630.000.
Lewis, Thomas R.; and Michne, William F., to Sterling Drug Inc. Lower-alkyl 3-R$_5$CO-octahydro-2,5-methanobenzo[g]quinoline-3-carboxylates. 4,148,794, Cl. 546-74.000.
Lieberman, Sideny, to Reading Door Closer Corp. Temperature compensating hydraulic door closer. 4,148,111, Cl. 16-59.000.
Lies, Thomas A.; and Clapp, James W., to American Cyanamid Company. Dithiocarbamate ester bactericides and fungicides. 4,148,795, Cl. 546-189.000.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Alkenyl and alkylidene norbornyl ketone derivatives. 4,148,826, Cl. 260-586.00G.
Ligorati, Ferdinando; Invernizzi, Renzo; Collu, Carlo; and Fontanesi, Maurizio, to Euteco S.p.A. Ziegler catalysts. 4,148,755, Cl. 252-429.00C.
Lile, James B. Folding hunting knife having ball latch. 4,148,140, Cl. 30-161.000.
Limmer, Ernst; and Hofl, Helmut, to Texas Instruments Deutschland GmbH. Scavenger hood for laser. 4,149,062, Cl. 219-121.00L.
Lindblad, Stig M. Locking device for safety belts. 4,148,447, Cl. 242-107.40A.
Linde, Hans, to H. Berthold AG. Keyboard controlled phototypesetting machine. 4,148,572, Cl. 354-15.000.
Linde, Harry T., to Chemetron Corporation. Bed light safety apparatus. 4,149,222, Cl. 362-130.000.
Lindgren, Goran E. S.: *See*—
Carlsson, Jan P. E.; Axen, Rolf E. A. V.; Drevin, Hakan N. Y.; and Lindgren, Goran E. S., 4,149,003, Cl. 546-261.000.
Lindholm, Edward P., to Polaroid Corporation. Synthesis of α-trifluoromethyl vinyl acetate. 4,149,010, Cl. 560-262.000.
Lisbaron, Vitaly I.: *See*—
Nudelman, Boris I.; Lisbaron, Vitaly I.; Kortnev, Vyacheslav P.; Sharova, Valentina P.; Imangulov, Vakel K.; and Afanasiev, Anatoly I., 4,148,620, Cl. 55-403.000.
Liston, Thomas V.; and Lowe, Warren, to Chevron Research Company. Antioxidant additive composition and lubricating oil containing same. 4,148,737, Cl. 252-32.70E.
Liston, Thomas V.; and Lowe, Warren, to Chevron Research Company. Antioxidant additive composition and lubricating oil containing same. 4,148,738, Cl. 252-32.70E.
Liston, Thomas V.; and Lowe, Warren, to Chevron Research Company. Antioxidant additive composition and lubricating oil containing same. 4,148,739, Cl, 252-32.70E.
Litton Business Systems, Inc.: *See*—
Fenwick, Jay G., 4,148,535, Cl. 312-304.000.
Lock, William E.: *See*—
Knowles, Daniel H.; and Lock, William E., 4,148,218, Cl. 73-829.000.
Loiselle, Guy J. Cleaner for a playing head of a cassette player. 4,149,206, Cl. 360-128.000.
London, Richard C.; MacMillan, Alexander J. F.; and Roxburgh, Henry L., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Gas mixing apparatus. 4,148,311, Cl. 128-142.200.
Long, Eric L., to Cutler-Hammer, Inc. Switch using resilient annular contactor. 4,149,049, Cl. 200-67.00G.
Long, Eric L., to Cutler-Hammer, Inc. Safety disconnect electric switch. 4,149,053, Cl. 200-157.000.
Longchamp, Jean-Francois. Method and system for converting the image content of transported film into television signal picture information. 4,149,191, Cl. 358-214.000.
Loper, Edward J., Jr., to General Motors Corporation. Analog to digital converter for providing the digital representation of an angle. 4,149,260, Cl. 364-817.000.
Lorenzo, John L., to Pitney-Bowes, Inc. Method of producing a binary code and means for using the same. 4,148,434, Cl. 235-435.000.
Losenhausen Maschinenbau AG: *See*—
Paar, Alois; and Konig, Fritz, 4,149,253, Cl. 364-505.000.
Lotspeich, Joseph A., to Gross-Given Manufacturing Company. Shelf configuration for spiral vendor. 4,148,412, Cl. 221-75.000.
Lovely, John D., to GTE Sylvania Incorporated. Burst gating signal generating circuit. 4,149,180, Cl. 358-20.000.
Lowe, Warren: *See*—
Liston, Thomas V.; and Lowe, Warren, 4,148,737, Cl. 252-32.70E.
Liston, Thomas V.; and Lowe, Warren, 4,148,738, Cl. 252-32.70E.
Liston, Thomas V.; and Lowe, Warren, 4,148,739, Cl. 252-32.70E.
Loyer, Michael, to Personal Products Company. Reduced length tampon-applicator assembly. 4,148,317, Cl. 128-263.000.
Lubmann, Elmont C. Cattle ranch gate construction. 4,148,156, Cl. 49-131.000.
Lucas Industries Limited: *See*—
Draper, Geoffrey R., 4,149,229, Cl. 362-349.000.
Luchinger, Paul; and Strickler, Ernst, to Mettler Instrumente AG. Top loading precision balance. 4,148,370, Cl. 177-210.0EM.
Ludovici, Werner: *See*—
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Lummus Company, The: *See*—
Gelbein, Abraham P.; and Kwon, Joon T., 4,148,865, Cl. 423-358.000.
Sze, Morgan C., 4,148,709, Cl. 208-10.000.
Lund, Roger E.: *See*—
Gorres, John M.; Hanson, Marlin M.; and Lund, Roger E., 4,149,265, Cl. 365-2.000.
Lundbohm, Lennart, to Granges NYBY AB. Long-distance heating conduit. 4,148,341, Cl. 138-105.000.

Lundquist, James A., deceased (by Harvel Industries Corp., assignee), to Harvel Industries Corp. Tape cartridge. 4,148,443, Cl. 242-55.19A.
Lussi, Andre: *See*—
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Luther, Gabriel G.: *See*—
Green, Robert B.; Keller, Richard A.; Luther, Gabriel G.; Schenck, Peter C.; and Travis, John C., 4,148,586, Cl. 356-318.000.
Lyons, Bernard J., to Raychem Corporation. Antioxidant comprising a hydroxy aromatic compound containing sulfur and an organic phosphonate. 4,148,747, Cl. 252-400.00A.
Lysanov, Vladislav S.: *See*—
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M. Braun GmbH: *See*—
Kreutz, Werner; Henne, Manfred; and Fritz, Jurgen, 4,149,109, Cl. 315-58.000.
M. Schaerer A.G.: *See*—
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Maas, Johannes: *See*—
Noordermeer, Cornelis J.; and Maas, Johannes, 4,149,251, Cl. 364-424.000.
MacAnally, Richard B., to American Hospital Supply Corporation. Rod lens assembly and method of making the same. 4,148,550, Cl. 350-54.000.
MacAnally, Richard B., to American Hospital Supply Corporation. Modular rod lens assembly and method of making the same. 4,148,551, Cl. 350-54.000.
Machcinski, Stephen A.: *See*—
Wilson, Lester E., Jr.; and Machcinski, Stephen A., 4,148,546, Cl. 339-192.00R.
MacMillan, Alexander J. F.: *See*—
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MacNair, Leonard I., to Metal Box Limited. Aerosol valve assembly having gas diffuser for charging. 4,148,419, Cl. 222-189.000.
Macquart, Raymond G.: *See*—
Palmer, Archibald E.; Macquart, Raymond G.; and Karaiste, Risto T. T., 4,149,187, Cl. 358-106.000.
Madsen, Hans B.; Klemmensen, Per D.; and Kolind-Andersen, Hans, to A/S Cheminova. N-phenyl or n-pyridyl sulfamides and methanesulfonamides. 4,148,901, Cl. 424-263.000.
Madsen, Rud F., to Aktieselskabet de Danske Sukkerfabrikker. Apparatus for measuring the viscosity or consistency of fluids. 4,148,214, Cl. 73-54.000.
Maeda, Masaya: *See*—
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Maeder, Edward G., to National Can Corporation. Method and apparatus for ironing containers. 4,148,208, Cl. 72-342.000.
Maegly, Robert E.: *See*—
Zelahy, John W.; Fairbanks, Norman P.; and Maegly, Robert E., 4,148,494, Cl. 277-53.000.
Maezawa, Shuji, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece circuit for automatically displaying the day of the week. 4,148,180, Cl. 58-4.00A.
Magnusson, John M.; and Cronk, Bryon J., to Minnesota Mining and Manufacturing Company. Method of providing recessed optical fiber ends for use in connector structures. 4,148,554, Cl. 350-96.210.
Magyar Asvanyolaj es Foldgaz Kiserleti Intezet: *See*—
Csikos, Rezso; Balogh, Andras; Herendi, Jozsef; and Gregor, Katalin, nee Balogh, 4,148,959, Cl. 428-215.000.
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Maier, Ludwig, to Ciba-Geigy Corporation. Glycylmethylphosphinic acids and derivatives as plant growth regulants. 4,148,624, Cl. 71-86.000.
Maillefer S.A.: *See*—
Weber, Kurt, 4,148,448, Cl. 242-128.000.
Majernik, Paul M., to General Motors Corporation. Incipient bearing failure indicator. 4,148,271, Cl. 116-67.00R.
Malherbe, Roger; and Rasberger, Michael, to Ciba-Geigy Corporation. Phenol stabilizers. 4,148,784, Cl. 260-45.80N.
Malick, Emil A., to Phillips Petroleum Company. Fermentation apparatus. 4,148,691, Cl. 195-142.000.
Malowany, Alfred S.: *See*—
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Mandl, Thomas H. Methods and apparatus for testing and measuring of psychological suggestibility components. 4,148,306, Cl. 128-2.00N.
Mann, Paula: *See*—
Wetzold, Paul W., 4,148,272, Cl. 116-219.000.
Mannesmann Aktiengesellschaft: *See*—
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Holter, Karl; Schrewe, Hans; Diederich, Gerd; and Pleschiutschnigg, Fritz P., 4,148,145, Cl. 33-143.00L.
Meurer, Hans; Jordans, Josef; and Henreich, Gerhard, 4,148,206, Cl. 72-239.000.
Marander, Myron P.: *See*—
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Marchetti, Joseph R.; Zwack, Robert R.; and Jerabek, Robert D., to PPG Industries, Inc. Amine acid salt-containing polymers for cationic electrodeposition. 4,148,772, Cl. 260-29.2EP.
Margolis, David S., to BICC Limited. Optical guides. 4,148,560, Cl. 350-96.230.
Marie, Gilbert; Lang, Andre; and Chapelet, Gilbert, to Societe Nationale Elf Aquitaine. Graft copolymers of copolymers of olefins or of olefins and non-conjugated dienes substrates with unsaturated derivatives of cyclic imides grafted thereon. 4,148,845, Cl. 260-878.00R.
Marino, Peter T.; Shelledy, Frank B.; and Smathers, Edmond W., to International Business Machines Corporation. Minor bit reduction on a magnetic head. 4,149,204, Cl. 360-119.000.
Mark, Victor; and Wilson, Phillip S., to General Electric Company. Polycarbonate composition containing siloxane plasticizer. 4,148,773, Cl. 260-29.1SB.
Markina, Emma F.: *See*—
Korjukin, Alexandr V.; Vesnitskaya, Galina S.; Gerasimova, Elena M.; Gudimov, Matvei M.; Markina, Emma F.; Klitsov, Alexandr A.; Kovtun, Alexandr T.; Beriev, Georgy M.; and Vasilchenko, Viktor L., 4,148,939, Cl. 427-164.000.
Markowitz, Isral J. Adjustably positionable electrical outlet. 4,148,544, Cl. 339-154.00R.
Marks, Bruce G., to RCA Corporation. Interlocking electron tube base and adapter. 4,148,541, Cl. 339-144.00T.
Marquardt, Kurt, to Haeger & Elsaesser. Method of decontaminating liquids. 4,148,727, Cl. 210-33.000.
Marquis, Edward T.: *See*—
Watts, Lewis W., Jr.; Lambert, Clifford L., Jr.; and Marquis, Edward T., 4,148,819, Cl. 260-453.0AL.
Mars, Inc.: *See*—
Reyner, Peter J.; and Henehan, Patrick A., 4,148,388, Cl. 194-102.000.
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Schultz, Neithardt; Martens, Peter; and Vahlensieck, Hans-Joachim, 4,148,831, Cl. 260-653.500.
Martens, Richard H.; and Simpson, Charles J., to Eastman Kodak Company. Instant processing film unit with internal dark slide and light seal. 4,148,650, Cl. 96-76.00C.
Martin, Eugene R., to SWS Silicones Corporation. Silylated block copolymers. 4,148,838, Cl. 260-825.000.
Martin, Larry S.: *See*—
Bird, Forrest M.; and Martin, Larry S., 4,148,313, Cl. 128-145.800.
Martin Yale Industries, Inc.: *See*—
Lerman, Victor, 4,148,555, Cl. 273-26.00A.
Martinez, Ginez. Quick disconnect valved coupling. 4,148,459, Cl. 251-149.600.
Martino, Peter V. Apparatus for continuously processing film in a horizontal through-put manner. 4,148,576, Cl. 354-320.000.
Maruyama, Isamu: *See*—
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 4,148,796, Cl. 546-199.000.
Marvin Glass & Associates: *See*—
Barlow, Gordon A.; and Imatt, Alex, 4,148,152, Cl. 46-216.000.
Marvin, John, to American Original Corporation, The. Hydraulic evisceration of mollusks. 4,148,112, Cl. 17-53.000.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Fischer, Hermann, 4,148,256, Cl. 101-350.000.
Massachusetts Institute of Technology: *See*—
Misunas, David P.; and Dennis, Jack B., 4,149,240, Cl. 364-200.000.
Masten, Richard R., Jr.: *See*—
Burr, Richard R.; Gabrielson, Lyle G.; and Masten, Richard R., Jr., 4,148,429, Cl. 229-36.000.
Masuda, Hideo; and Matsuura, Masayuki. Livestock holder. 4,148,280, Cl. 119-103.000.
Masuhara, Eiichi; Nakabayashi, Nobuo; and Takeyama, Morio, to Mitsui Petrochemical Industries Ltd. Curable composition. 4,148,988, Cl. 526-318.000.
Mathews, Bernard C.; and Rogers, John A., to Mathews Company. Fold-up crop vegetation cutting implement. 4,148,174, Cl. 56-12.700.
Mathews Company: *See*—
Mathews, Bernard C.; and Rogers, John A., 4,148,174, Cl. 56-12.700.
Matier, William L.: *See*—
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Matschke, Gunther: *See*—
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Matsushita Electric Industrial Co., Ltd.: *See*—
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Miki, Yasumasa; and Nakanishi, Hideo, 4,148,250, Cl. 99-403.000.
Minakuchi, Hiroshi, 4,149,116, Cl. 318-341.000.
Nawa, Motoyuki; Takahashi, Yutaka; and Nishijo, Masaru, 4,148,333, Cl. 137-834.000.
Nishino, Atsushi; Hayakawa, Hayashi; and Yoshida, Akihiko, 4,148,131, Cl. 29-570.000.
Sekido, Satoshi; Sotomura, Tadashi; and Ninomiya, Yoshito, 4,148,976, Cl. 429-191.000.

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Maul, Peter L.: *See—*
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Max Planck Gesellschaft zur Forderung der Wissenschaften, e.V.: *See—*
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Maxton Manufacturing Company: *See—*
Risk, Daniel W., 4,148,248, Cl. 91-446.000.
Mayama, Masayoshi: *See—*
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Mayer, James M.: *See—*
Crutchfield, Marvin M.; Langguth, Robert P.; and Mayer, James M., 4,148,742, Cl. 252-102.000.
Mayer, Peter; Blair, Robert W.; and Zamin, Mohammed, to Heritage Silversmiths Limited. Electropolishing of stainless steel. 4,148,699, Cl. 204-129.850.
Mayer, Peter; Blair, Robert W.; and Zamin, Mohammed, to Heritage Silversmiths Limited. Electrochemical finishing of stainless steel. 4,148,707, Cl. 204-297.00W.
Mayr, Gunter: *See—*
Schulte, Hugo; Muller, Wolfgang; Schlaich, Jorg; and Mayr, Gunter, 4,148,850, Cl. 261-109.000.
Mazzaferro, Nicola: *See—*
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McCandless, William; Leu, Robert F.; Kroder, Ernest A.; and Tomecek, Charles J., to Dentsply Research & Development Corp. Loading unit for an automatic bur grinding machine. 4,148,161, Cl. 51-215.0CP.
McClain, Dorothee M., to National Distillers and Chemical Corporation. Polymer dispersion process. 4,148,766, Cl. 260-23.00H.
McClain, Dorothee M., to National Distillers and Chemical Corporation. Polymer dispersion process. 4,148,768, Cl. 260-23.00H.
McClung, Glen L.: *See—*
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McCullough, Thomas W., to United States of America, Navy. Tension release latch. 4,148,514, Cl. 294-83.00R.
McDonnell Douglas Corporation: *See—*
Froyd, Stanley G.; Frank, William A.; and Roome, Richard, 4,149,235, Cl. 364-101.000.
McEowen, Victor R. Method of fabricating flexible joints. 4,148,119, Cl. 29-149.50B.
McGee, Derek J.: *See—*
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McGregor, William H.: *See—*
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McGuire, James F.: *See—*
Costello, Matthew J.; De Luca, Albert M.; Saunders, Thomas K.; and McGuire, James F., 4,149,033, Cl. 179-1.00C.
McIntosh, George A.; and Smith, Russell, to Diamond Shamrock Corporation. Lubricating composition applied over primer coat. 4,148,970, Cl. 428-469.000.
McKay, Dwight L.: *See—*
Nielsen, Richard H.; McKay, Dwight L.; and Dale, Glenn H., 4,148,712, Cl. 208-78.000.
Nielsen, Richard H.; McKay, Dwight L.; and Dale, Glenn H., 4,148,714, Cl. 208-114.000.
McKee, Laird W., to Rohr Industries, Incorporated. Suspension system. 4,148,501, Cl. 280-711.000.
McKenna, Charles M.: *See—*
Arndt, Herbert L., deceased; Arndt, Margaret L., administratrix; Keller, John H.; McKenna, Charles M.; and Winnard, James R., 4,149,084, Cl. 250-492.00A.
McLennan, Lyall A. Hasp door latch. 4,148,509, Cl. 292-270.000.
McMillen, Richard E.; Francis, Robert L.; and DePauw, Richard A., to International Harvester Company. Swept back impeller blade for axial flow rotor. 4,148,323, Cl. 130-27.00T.
McNally, Gordon, to Vireco, A.G. Mirror mechanism for a film projector. 4,148,568, Cl. 352-109.000.
McQueen, Alfred S. Baling machine. 4,148,255, Cl. 100-247.000.
Mead Corporation, The: *See—*
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Mead Johnson & Company: *See—*
Kreighbaum, William E.; Matier, William L.; and Roth, Herbert R., 4,148,908, Cl. 424-274.000.
MEI Systems Inc.: *See—*
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Meimoun, Daniel S.: *See—*
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Meingassner, Josef G.: *See—*
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Meister, John J., to Phillips Petroleum Company. Oil recovery process using viscosified surfactant solutions. 4,148,736, Cl. 252-8.55R.
Menasha Corporation: *See—*
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Menikheim, Virginia C.: *See—*
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Mercer, Alfred R., Jr., to Structure Instrumentation, Inc. Vehicle weighing system transducer. 4,148,369, Cl. 177-136.000.
Merck & Co., Inc.: *See—*
Atkinson, Joseph G.; Rooney, Clarence S.; Belanger, Patrice C.; and Remy, David C., 4,148,903, Cl. 424-267.000.
Dolling, Ulf-H.; Grabowski, Edward J. J.; Schoenewaldt, Erwin F.; and Sletzinger, Meyer, 4,149,012, Cl. 562-574.000.
Talaty, Chandravadan N.; Wright, Jeremy; and Zenker, Nicolas, 4,149,011, Cl. 562-434.000.
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Butter, Karl; Lechner, Manfred; and Stich, Kurt, 4,148,121, Cl. 29-157.00C.
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Gunn-Smith, Ronald A., 4,148,416, Cl. 222-94.000.
MacNair, Leonard I., 4,148,419, Cl. 222-189.000.
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Luchinger, Paul; and Strickler, Ernst, 4,148,370, Cl. 177-210.0EM.
Metz, Hugh J., to United States of America, Energy. Method for forming a thermocouple. 4,148,134, Cl. 29-573.000.
Meurer, Hans; Jordans, Josef; and Henreich, Gerhard, to Mannesmann Aktiengesellschaft. Tube welding machine with exchangeable rolls. 4,148,206, Cl. 72-239.000.
Meyer, Leonard J., to Abbott Laboratories. Tool for surgical preparations having an internal supply of antiseptic solution. 4,148,318, Cl. 128-269.000.
Meyer, Roth & Pastor Maschinenfabrik GmbH: *See—*
Rahn, Paul, 4,149,058, Cl. 219-51.000.
Meyers, Frederick J.; and Zille, Marvin H., to Barber-Colman Company. Induction air mixing box control. 4,148,435, Cl. 236-13.000.
Michel, Rolf; and Moslener, Jorn, to DEMAG Aktiengesellschaft. Switch for wire and refined iron mills. 4,148,387, Cl. 193-39.000.
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Michner, James G. Facsimile drive with dynamic brake. 4,149,193, Cl. 358-267.000.
Miculka, Zdenek; and Janirek, Vladislav, to Statni vyzkumny ustav kozedelny. Method for treating leathers. 4,148,947, Cl. 427-366.000.
Midland Tank Rental Company: *See—*
Reynolds, John L.; Sappington, Jack L.; and Sullivan, Lawrence J., 4,148,445, Cl. 242-86.50R.
Midzutani, Wataru; Kikuma, Toshio; Nakajima, Koe; and Sasahira, Seiichi;, to Nippon Steel Corporation. Method and apparatus for manufacturing metal pipe. 4,148,426, Cl. 228-146.000.
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Mignonac, Sylviane S. J.: *See—*
Thuillier, Germaine; Mignonac, Sylviane S. J.; and Bessin, Pierre A. R., 4,148,915, Cl. 424-308.000.
Mii, Seihei: *See—*
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Miki, Masayuki; and Miyakawa, Nobuaki, to Hitachi, Ltd. Circuit for actuating a display with an improved comparator. 4,149,149, Cl. 340-753.000.
Miki, Masayuki: *See—*
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Miki, Yasumasa; and Nakanishi, Hideo, to Matsushita Electric Industrial Co., Ltd. Means for exhausting vapors from a steam cooker. 4,148,250, Cl. 99-403.000.
Miles Laboratories, Inc.: *See—*
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Nand, Shradha; and Smith, Melvin D., 4,148,611, Cl. 23-230.00B.
Woessner, Warren D.; Sih, Charles J.; Kluender, Harold C.; Arndt, Henry C.; and Biddlecom, William G., 4,149,017, Cl. 568-665.000.
Milianowicz, Stanislaw A.; and Bould, Fred, to Westinghouse Electric Corp. Electrically conducting gas condenser support for a puffer circuit interrupter. 4,149,051, Cl. 200-148.00A.
Miller, Harry; Narveson, Parm L.; Hancock, William R.; and Hsu, Joseph P., to Sperry Rand Corporation. Aircraft flight instrument display system. 4,149,148, Cl. 340-721.000.
Miller, Jon M.: *See—*
Evans, Ronald H.; and Miller, Jon M., 4,149,140, Cl. 340-58.000.
Miller, Kent A. Corn stalk harvester and windrow attachment for a corn picker header. 4,148,175, Cl. 56-14.400.
Miller, Monroe A., Jr., to Bendix Corporation, The. Digital ρ-θ to XY scan converter for use with limited access or random access reiteration memory. 4,149,252, Cl. 364-456.000.

Miller, Ross M. Piece of furniture. 4,148,520, Cl. 297-16.000.
Miller, Theodore E., Jr.; and Cabala, Kenneth M., to Dow Chemical Company, The. Batch preparation of samples by dilution. 4,148,610, Cl. 23-230.00A.
Milliken Research Corporation: *See*—
Stewart, William H., Jr., 4,148,668, Cl. 134-22.00C.
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Minakuchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Motor speed control system. 4,149,116, Cl. 318-341.000.
Minnesota Mining and Manufacturing Company: *See*—
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Bird, Forrest M., 4,148,312, Cl. 128-145.600.
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Magnusson, John M.; and Cronk, Bryon J., 4,148,554, Cl. 350-96.210.
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Smith, Robert T.; and Binek, Paul H., 4,149,072, Cl. 250-199.000.
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Minovitch, Michael A. High speed transit system. 4,148,260, Cl. 104-138.00R.
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Torii, Sigeru; Tanaka, Hideo; and Mishima, Kiyoshi, 4,148,697, Cl. 204-78.000.
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Mitsubishi Gas Chemical Co., Inc.: *See*—
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Mixan, Craig E.; and Burk, George A., to Dow Chemical Company, The. ((5-Nitro-2-thiazolyl)thio)polyhalogenated pyridines. 4,148,899, Cl. 424-263.000.
Miyagawa, Norio: *See*—
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Miyakawa, Nobuaki: *See*—
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Mizuno, Toshio; and Murakami, Heiichiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for reclaiming a used active carbon. 4,149,023, Cl. 13-7.000.
Moberly, Jack E. Tackle box light. 4,149,223, Cl. 362-156.000.
Mobil Oil Corporation: *See*—
Andress, Harry J., Jr., 4,148,605, Cl. 422-7.000.
Chen, Nai Y.; and Reagan, William J., 4,148,835, Cl. 260-682.000.
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Modular Distribution Systems Limited: *See*—
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Moen, Alfred M., to Stanadyne, Inc. Anti-siphon spray head. 4,148,438, Cl. 239-571.000.
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Molusis, Anthony J., to American Chain & Cable Co., Inc. Method and apparatus for flow metering. 4,149,254, Cl. 364-510.000.
Monacelli, Umberto. Apparatus for driving fixing elements, such as nails and staples, to positions accessible with difficulty. 4,148,425, Cl. 227-130.000.
Monarch Marking Systems, Inc.: *See*—
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Yung, Kai-Lim W.; Silverman, Bernard; and Menikheim, Virginia C., 4,148,960, Cl. 428-288.000.
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Moore, Douglas R.; and Kniepkamp, Alberto, to Norlin Industries, Inc. Percussion simulating techniques. 4,148,240, Cl. 84-1.220.
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Morcher, Bernhard; and Bruck, Rolf, to AGFA-Gevaert AG. Process for the preparation of matted photographic layers containing gelatine. 4,148,943, Cl. 427-256.000.
Morelock, Charles R.: *See*—
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Morez, Gene S.; and Swain, Richard S., to Norlin Music, Inc. Electronic musical instrument with means for automatically generating chords and harmony. 4,148,241, Cl. 84-1.030.
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Morita, Minoru; Fujii, Yoshishige; and Taniguchi, Yasuo, to Toray Industries, Inc. Sterilization of dialyzer. 4,148,606, Cl. 422-21.000.
Moriya, Shigeru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Oil pressure control means for an automatic transmission. 4,148,232, Cl. 74-869.000.
Morley, Roy D., to Caterpillar Tractor Co. Track chain bushing face cleaner. 4,148,109, Cl. 15-345.000.
Morozumi, Mituharu; Kojima, Gen; and Abe, Takeshi, to Asahi Glass Co. Ltd. Thermal modification method for fluoroelastomers. 4,148,982, Cl. 526-58.000.
Morozumi, Shinji: *See*—
Akahane, Yoshikazu; and Morozumi, Shinji, 4,148,184, Cl. 58-23.0AC.
Morris, James G.; and Lemkey, Franklin D., to United Technologies Corporation. High ductility, high strength aluminum conductor. 4,148,671, Cl. 148-11.50A.
Morris, Robert L.: *See*—
Santilli, Arthur A.; and Morris, Robert L., 4,148,801, Cl. 260-307.00G.
Morrissette, Alfred B.; Nusbaum, Donald W.; and Briggs, Charles B., to Scale Models Unlimited. Self-sealing caps for squeeze-type containers. 4,148,420, Cl. 222-494.000.
Mort, David; and Hood, Ben B., to Westinghouse Electric Corp. Apparatus for continuously cladding a dished surface. 4,149,061, Cl. 219-76.140.

Mortensen, Niels E.; Christiansen, Bent E.; and Kjaer, Ian, to A/S Skandinavisk Tobakskompagni. Wrapper rolling machine for cigars and similar tobacco products. 4,148,238, Cl. 83-152.000.

Morville, Malcolm: *See*—
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, 4,148,920, Cl. 424-319.000.

Moslener, Jorn: *See*—
Michel, Rolf; and Moslener, Jorn, 4,148,387, Cl. 193-39.000.

Mote, Clayton D., Jr.: *See*—
Holoyen, Sindre; and Mote, Clayton D., Jr., 4,148,236, Cl. 83-74.000.

Motorola, Inc.: *See*—
Kellen, Robert A., 4,149,102, Cl. 310-320.000.
Prioste, Jerry E., 4,149,263, Cl. 364-900.000.

Mottes, Samuel. Method and apparatus for producing underground installations of concrete pipe. 4,148,193, Cl. 405-155.000.

Mottu, Andre: *See*—
Bernoco, Domenico; Mottu, Andre; and Waltz, Lothar, 4,148,607, Cl. 23-230.00B.

Moyroud, Louis M. Photocomposing device and method. 4,148,571, Cl. 354-12.000.

Moyski, John G.; and Mueller, Horst W., to Chaparral Industries, Incorporated. Exerciser apparatus. 4,148,478, Cl. 272-73.000.

Mozley, Richard H., to National Research Development Corporation. Cyclone separator. 4,148,723, Cl. 209-211.000.

MTU-Motoren und Turbinen-Union Munchen GmbH: *See*—
Rossmann, Axel, 4,148,350, Cl. 164-132.000.

Mueller, Horst W.: *See*—
Moyski, John G.; and Mueller, Horst W., 4,148,478, Cl. 272-73.000.

Mueller, Paul A.: *See*—
Idelsohn, Jerome M.; Mueller, Paul A.; Freedman, M. David; and Hebert, Raymond T., 4,149,089, Cl. 250-563.000.

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Mulder, Jan L., deceased; and Carlsson, Lars A. I., 4,148,787, Cl. 260-112.50R.

Mulder, Jan L., deceased (by Mulder, Anneliese, executrix); and Carlsson, Lars A. I., to Ferring AB. Antidiuretically effective polypeptide and a process for preparing the same. 4,148,787, Cl. 260-112.50R.

Mull, Leland G., to BMD Development Trust. Device for measuring ovulation. 4,148,304, Cl. 128-2.00R.

Muller, Ernst; and Pietruska, Klaus F. A., to Imperial Group Limited. Perforating device. 4,148,324, Cl. 131-23.00R.

Muller, Horst: *See*—
Frey, Volker; Muller, Horst; and Riedle, Rudolf, 4,148,818, Cl. 260-448.20E.

Muller, Karl-Heinz: *See*—
Schliepe, Reinhard; Rindfleisch, Volker; Muller, Karl-Heinz; and Thieringer, Hans-Martin, 4,149,074, Cl. 250-311.000.

Muller, Wolfgang: *See*—
Schulte, Hugo; Muller, Wolfgang; Schlaich, Jorg; and Mayr, Gunter, 4,148,850, Cl. 261-109.000.

Murakami, Heiichiro: *See*—
Mizuno, Toshio; and Murakami, Heiichiro, 4,149,023, Cl. 13-7.000.

Murakami, Tomomi, to Citizen Watch Company Limited. Supporting structure for quartz oscillator. 4,148,183, Cl. 58-23.00V.

Murakami, Yoshikazu; and Komatsu, Yasutoshi, to Sony Corporation. Dielectric resonator stabilized micro-strip oscillators. 4,149,127, Cl. 331-96.000.

Mustikka, Lauri A., to Outokumpu Oy. Roller screen. 4,148,398, Cl. 209-668.000.

Myers, Gary A., to Atlantic Richfield Company. Process for preparing sulfur-containing coal or lignite for combustion. 4,148,613, Cl. 44-1.00R.

Nagae, Yoshiharu; and Kawakami, Hideaki, to Hitachi, Ltd. Display data synthesizer circuit. 4,149,151, Cl. 340-765.000.

Nagai, Kunio, to Sony Corporation. Television receiver with display of audio signals. 4,149,188, Cl. 358-139.000.

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Nagai, Yasuo; Touge, Takashi; Yamagata, Matazou; and Sonetsuji, Noboru, to Fujitsu Limited. Light emitting element drive system. 4,149,071, Cl. 250-199.000.

Nagami, Akira, to Nippon Electric Co., Ltd. Amplifier circuit for obtaining true and complementary output signals from an input signal. 4,149,099, Cl. 307-279.000.

Nagano, Humikazu; Sasaki, Hiromu; and Yasuda, Syoichi, to Sharp Kabushiki Kaisha. Image sensor output correcting system. 4,149,143, Cl. 340-146.3AG.

Nagano, Satoshi: *See*—
United States of America, National Aeronautics and Space Administration; and Nagano, Satoshi, 4,149,233, Cl. 363-71.000.

Nagaoka, Yukio: *See*—
Kishi, Shoichi; Fukuzaki, Takaharu; and Nagaoka, Yukio, 4,149,155, Cl. 340-524.000.

Nagase, Hiroshi, to Takeda Chemical Industries, Ltd. Tetrahydroisophthalimide compounds. 4,148,625, Cl. 71-88.000.

Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, to Canon Kabushiki Kaisha. Receiving sheet. 4,148,968, Cl. 428-454.000.

Najer, Henry: *See*—
Giudicelli, Don P. R. L.; and Najer, Henry, 4,148,923, Cl. 424-330.000.

Nakabayashi, Nobuo: *See*—
Masuhara, Eiichi; Nakabayashi, Nobuo; and Takeyama, Morio, 4,148,988, Cl. 526-318.000.

Nakagiri, Tadahiko; Nezu, Matao; Oguchi, Toshiaki; Hatuse, Toshikazu; and Natori, Minoru, to Citizen Watch Company Limited. Alarm watch equipped with electronic calculator. 4,149,257, Cl. 364-705.000.

Nakai, Taiichiro: *See*—
Yuguchi, Hiroshi; Nunokawa, Makoto; and Nakai, Taiichiro, 4,149,039, Cl. 179-15.55R.

Nakajima, Koe: *See*—
Midzutani, Wataru; Kikuma, Toshio; Nakajima, Koe; and Sasahira, Seiichi;, 4,148,426, Cl. 228-146.000.

Nakanishi, Hideo: *See*—
Miki, Yasumasa; and Nakanishi, Hideo, 4,148,250, Cl. 99-403.000.

Nakano, Takazi. Freewheel. 4,148,383, Cl. 192-64.000.

Nakao, Masaru: *See*—
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 4,148,796, Cl. 546-199.000.

Nakata, Katumi: *See*—
Kawano, Hideo; Dietrich, Oelschlagel; Nakata, Katumi; and Yamaji, Kenkichi, 4,148,971, Cl. 428-558.000.

Nand, Shradha; and Smith, Melvin D., to Miles Laboratories, Inc. Test composition, device and method for the detection of peroxidatively active substances. 4,148,611, Cl. 23-230.00B.

Napolitano, John P. Toilet tank securing device. 4,148,105, Cl. 4-353.000.

Narayan, Thirumurti, to BASF Wyandotte Corporation. Novel carboxylate catalysts for the preparation of foams characterized by polyisocyanurate, polyurethane and poly (urethane-isocyanurate) linkages. 4,148,980, Cl. 521-115.000.

Narukawa, Hiroshi; Takeuchi, Yasuhira; Saito, Koichi; and Ohfuji, Yoshio, to Kuraray Co., Ltd. Flexible building sheet materials. 4,148,781, Cl. 260-42.510.

Narveson, Parm L.: *See*—
Miller, Harry; Narveson, Parm L.; Hancock, William R.; and Hsu, Joseph P., 4,149,148, Cl. 340-721.000.

Nash, Larry L., to Phillips Petroleum Company. Method of making novel rubbery block copolymers and pressure-sensitive adhesives. 4,148,771, Cl. 260-27.0BB.

Nassar, Michael F. Male oral contraceptive. 4,148,892, Cl. 424-195.000.

Nath, Guenther. UV irradiation device. 4,149,086, Cl. 250-504.000.

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Maeder, Edward G., 4,148,208, Cl. 72-342.000.
Zundel, Arthur P., 4,148,409, Cl. 220-267.000.

National Distillers and Chemical Corporation: *See*—
McClain, Dorothee M., 4,148,766, Cl. 260-23.00H.
McClain, Dorothee M., 4,148,768, Cl. 260-23.00H.

National Research Development Corporation: *See*—
Mozley, Richard H., 4,148,723, Cl. 209-211.000.
Pobgee, Peter J., 4,149,029, Cl. 178-18.000.

National Semiconductor Corporation: *See*—
Wilcox, Milton E., 4,149,179, Cl. 358-20.000.

Natori, Minoru: *See*—
Nakagiri, Tadahiko; Nezu, Matao; Oguchi, Toshiaki; Hatuse, Toshikazu; and Natori, Minoru, 4,149,257, Cl. 364-705.000.

Nauchno-Issledovatelsky I Konstruktorsko-Teknologichesky Institut Teploenergeticheskogo Priborostroenia: *See*—
Pevzner, Mark G.; Pinchuk, Nikolai I.; Krukover, Pavel I.; and Lemchuzhnikov, Nikolai K., 4,149,138, Cl. 337-372.000.

Nawa, Motoyuki; Takahashi, Yutaka; and Nishijo, Masaru, to Matsushita Electric Industrial Co., Ltd. Fluid diverting assembly. 4,148,333, Cl. 137-834.000.

NCR Corporation: *See*—
Gordy, Robert S.; Sanders, David E.; and Chambers, Ramon P., 4,149,121, Cl. 325-321.000.
Schuck, David B., 4,148,558, Cl. 350-96.200.

Neal, Charles B.: *See*—
Burdick, Kenneth J.; Hand, Wilfred L.; Klein, Arthur H.; and Neal, Charles B., 4,149,181, Cl. 358-31.000.

Nedelec, Lucien; Pierdet, Andre; Dumont, Claude; and Kannengiesser, Marie-Helene, to Roussel Uclaf. 7-Amino-6,7-dihydro [5H]benzocycloheptene derivatives. 4,148,919, Cl. 424-33.00D.

Nelboeck-Hochstetter, Michael: *See*—
Muhlegger, Klaus; Weimann, Gunter; and Nelboeck-Hochstetter, Michael, 4,148,994, Cl. 536-28.000.

Nelson, David P. Load cell scale. 4,148,371, Cl. 177-256.000.

Nelson, Donald L., to Dow Chemical Company, The. Polyester resins containing dicyclopentadiene. 4,148,765, Cl. 260-22.0CB.

Nelson, Eric L., to Nelson Research & Development Company. Inhibition of platelet aggregation with selected phosphoric acid esters. 4,148,878, Cl. 424-101.000.

Nelson, Eric L., to Nelson Research & Development Company. Inhibition of platelet aggregation with selected phosphonic and phosphinic acid esters. 4,148,879, Cl. 424-101.000.

Nelson, Gerald B.; and Prindle, William J., to Papakube Corp. Stable blocks formed of shredded paper-like material. 4,148,952, Cl. 428-2.000.

Nelson Research & Development Company: *See*—
Nelson, Eric L., 4,148,878, Cl. 424-101.000.
Nelson, Eric L., 4,148,879, Cl. 424-101.000.

Nemoto, Shigeru: *See*—
Kobayashi, Minoru; and Nemoto, Shigeru, 4,149,203, Cl. 360-60.000.

Neubeck, Kurt; and Julien, Hermann, to Alexander Wiegand GmbH & Co. Armaturen- und Manometerfabrik. Method and device for pro-

ducing a spring manometer measuring system as well as a tube spring manometer. 4,148,123, Cl. 29-407.000.
Neugebauer, Heinz, to Werkzeugmaschinenfabrik Adolf Waldrich Coburg. Worm and worm-rack with hydrostatic lubrication. 4,148,227, Cl. 74-467.000.
Neuhierl, Hermann. Model aircraft construction. 4,148,450, Cl. 244-124.000.
New England Machinery, Inc.: *See*—
Ionescu, Alexandru D., 4,148,390, Cl. 198-400.000.
Nezu, Matao: *See*—
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Nicks, Gene E.: *See*—
Kennedy, Carl D.; and Nicks, Gene E., 4,148,834, Cl. 260-671.00B.
Nicolaus, Frank G., to Bally Manufacturing Corporation. Coin-agitating method and means for coin-counting and dispensing machines. 4,148,331, Cl. 133-8.00R.
Niculescu, Vasile. Method of fabricating thermoelectric power generator modules. 4,149,025, Cl. 136-206.000.
Nidecker, Henri P. Ski with gripping device. 4,148,500, Cl. 280-604.000.
Niederprum, Hans: *See*—
Schneider, Siegfried; and Niederprum, Hans, 4,148,867, Cl. 423-490.000.
Nielsen, Richard H.; McKay, Dwight L.; and Dale, Glenn H., to Phillips Petroleum Company. Metals passivation with catalyst fines. 4,148,712, Cl. 208-78.000.
Nielsen, Richard H.; McKay, Dwight L.; and Dale, Glenn H., to Phillips Petroleum Company. Metals passivation with catalyst fines. 4,148,714, Cl. 208-114.000.
Niessen, Frank R.; and Garren, John F., Jr., to United States of America, Administrator, National Aeronautics and Space Administration. Filtering technique based on high-frequency plant modeling for high-gain control. 4,148,452, Cl. 244-195.000.
Niibe, Akitoshi. Temperature controlled flexible electric heating panel. 4,149,066, Cl. 219-505.000.
Nikitin, Jury I.: *See*—
Fedoseev, Dmitry V.; Deryagin, Boris V.; Bakul, Valentin N.; Prikhna, Alexei I.; Gerasimenko, Valentin K.; Poltoratsky, Vladimir G.; Nikitin, Jury I.; Vnukov, Stanislav P.; and Varnin, Valentin P., 4,148,964, Cl. 428-403.000.
Ninomiya, Harumi: *See*—
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Ninomiya, Yoshito: *See*—
Sekido, Satoshi; Sotomura, Tadashi; and Ninomiya, Yoshito, 4,148,976, Cl. 429-191.000.
Nippon Columbia Kabushikikaisha: *See*—
Okamoto, Michio; Washizawa, Shigetaka; and Kohsaka, Osamu, 4,149,036, Cl. 179-15.0BT.
Nippon Electric Co., Ltd.: *See*—
Nagami, Akira, 4,149,099, Cl. 307-279.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
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Nippon Kayaku Kabushiki Kaisha: *See*—
Ogawa, Masanobu; and Kojima, Toshitake, 4,148,822, Cl. 562-534.000.
Nippon Kogaku K.K.: *See*—
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Nippon Soken, Inc.: *See*—
Kohama, Tokio; Obayashi, Hideki; Ozaki, Tadashi; and Nohira, Hidetaka, 4,148,286, Cl. 123-119.00A.
Nippon Steel Corporation: *See*—
Midzutani, Wataru; Kikuma, Toshio; Nakajima, Koe; and Sasahira, Seiichi;, 4,148,426, Cl. 228-146.000.
Nippondenso Co., Ltd.: *See*—
Harada, Susumu; and Endo, Kunio, 4,148,283, Cl. 123-32.0EG.
Kawamura, Siyoutaro; Ueda, Mitsuru; and Imaeda, Makoto, 4,149,131, Cl. 335-202.000.
Nishijo, Masaru: *See*—
Nawa, Motoyuki; Takahashi, Yutaka; and Nishijo, Masaru, 4,148,333, Cl. 137-834.000.
Nishikawa, Masaji; and Kasuga, Muneo, to Olympus Optical Company Limited. Bias voltage adjusting means for electrographic apparatus. 4,148,577, Cl. 355-35.00C.
Nishimura, Toshimichi: *See*—
Yamanaka, Seisuke; and Nishimura, Toshimichi, 4,149,182, Cl. 358-43.000.
Nishino, Atsushi; Hayakawa, Hayashi; and Yoshida, Akihiko, to Matsushita Electric Industrial Co., Ltd. Method for manufacturing a solid electrolytic capacitor. 4,148,131, Cl. 29-570.000.
Nishino, Takaichi: *See*—
Sakurada, Kenichi; and Nishino, Takaichi, 4,148,522, Cl. 297-284.000.
Nishioka, Hiroshi, to Volcano Kabushiki Kaisha. Toilet of incinerating type. 4,148,103, Cl. 4-111.100.
Nissan Motor Company, Limited: *See*—
Sakurada, Kenichi; and Nishino, Takaichi, 4,148,522, Cl. 297-284.000.
Sensui, Kunio; and Hayashi, Yoshimasa, 4,148,352, Cl. 164-112.000.
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Nohira, Hidetaka: *See*—
Kohama, Tokio; Obayashi, Hideki; Ozaki, Tadashi; and Nohira, Hidetaka, 4,148,286, Cl. 123-119.00A.
Noly, Jean, to Potain. Winches for the control of lifting equipment of the crane, overhead crane or similar type. 4,149,115, Cl. 318-301.000.
Noordermeer, Cornelis J.; and Maas, Johannes, to Observator B.V. Dredge profile computor for a cutter suction dredge. 4,149,251, Cl. 364-424.000.
Nordiske Kabel- og Traadfabriker A/S: *See*—
Fog, Ernst; and Jepsen, Carl J., 4,148,464, Cl. 254-150.0FH.
Norlin Industries, Inc.: *See*—
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Norlin Music, Inc.: *See*—
Morez, Gene S.; and Swain, Richard S., 4,148,241, Cl. 84-1.030.
Norman, Ron L.: *See*—
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Northern Border Pipeline Company: *See*—
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Northern Telecom Limited: *See*—
Kos, Steven; and Baraff, David R., 4,149,197, Cl. 358-294.000.
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Cricchi, James R.; and Ahlport, Boyce T., 4,149,270, Cl. 365-222.000.
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Northrup, Thomas A.: *See*—
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Nudelman, Abraham; and Patchornik, Abraham, to Yeda Research and Development Co., Ltd. Pyrrole cephalosporin derivatives. 4,148,998, Cl. 544-27.000.
Nudelman, Boris I.; Lisbaron, Vitaly I.; Kortnev, Vyacheslav P.; Sharova, Valentina P.; Imangulov, Vakel K.; and Afanasiev, Anatoly I., to Tashkentsky Nauchno-Issledovatelsky i Proektny Institut Stroitelnykh Materialov "Niistromproekt". Device including opposed fan pairs precipitating chlorine-containing compounds from waste gases. 4,148,620, Cl. 55-403.000.
Nudelman, Boris I.: *See*—
Kulabukhov, Vadim A.; Allakhverdov, Eduvard R.; Perlin, Boris A.; Shteinberg, Grigory S.; Afanasiev, Anatoly I.; Sheludko, Valentin V.; Nudelman, Boris I.; Volkov, Valery G.; Salomasov, Vasily F.; and Startsev, Jury V., 4,148,601, Cl. 432-109.000.
Null, Fay E., to United States of America, Air Force. Doppler countermeasure device. 4,149,166, Cl. 343-18.00E.
Nunan, Craig S.: *See*—
Pavkovich, John M.; and Nunan, Craig S., 4,149,247, Cl. 364-414.000.
Nunokawa, Makoto: *See*—
Yuguchi, Hiroshi; Nunokawa, Makoto; and Nakai, Taiichiro, 4,149,039, Cl. 179-15.55R.
Nusbaum, Donald W.: *See*—
Morrissette, Alfred B.; Nusbaum, Donald W.; and Briggs, Charles B., 4,148,420, Cl. 222-494.000.
Nussbaum, Marvin L.; and Knaggs, Edward A., to Stepan Chemical Company. Process for sulfonation. 4,148,821, Cl. 260-505.00S.
Nylex Corporation Limited: *See*—
Lane, Maxwell J., 4,148,702, Cl. 204-159.120.
Obayashi, Hideki: *See*—
Kohama, Tokio; Obayashi, Hideki; Ozaki, Tadashi; and Nohira, Hidetaka, 4,148,286, Cl. 123-119.00A.
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Burton, Robert S., III, 4,148,710, Cl. 208-11.00R.
Occidental Research Corporation: *See*—
Compton, Leslie E., 4,148,358, Cl. 166-256.000.
Oddi, Michael J. Positive acting photoresist comprising diazide ester, novolak resin and rosin. 4,148,654, Cl. 96-91.00D.
Ogawa, Akira: *See*—
Kondoh, Syunichi; Matsufuji, Akihiro; Umehara, Akira; Sato, Akira; and Ogawa, Akira, 4,148,658, Cl. 96-115.00P.
Ogawa, Masanobu; and Kojima, Toshitake, to Nippon Kayaku Kabushiki Kaisha. Process for the manufacture of methacrylic or acrylic acid. 4,148,822, Cl. 562-534.000.
Ogi, Keisuke: *See*—
Kageyama, Satoshi; Takeuchi, Keiji; and Ogi, Keisuke, 4,149,142, Cl. 340-146.1BA.
Ogita, Tamotu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air bleed type carburetor. 4,148,848, Cl. 261-39.00A.
Oguchi, Toshiaki: *See*—
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Ohara, Yuichi, to Kabushiki Kaisha Daini Seikosha. Artificial cardiac pacemaker. 4,148,320, Cl. 128-419.0PG.
Ohfuji, Yoshio: *See*—
Narukawa, Hiroshi; Takeuchi, Yasuhira; Saito, Koichi; and Ohfuji, Yoshio, 4,148,781, Cl. 260-42.510.
Ohiwa, Tadaaki; and Kawase, Yosio, to Sumitomo Aluminium Smelting Co., Ltd. Anode paste filling apparatus for an aluminum electrolytic cell. 4,148,706, Cl. 204-245.000.
Ohta, Hideyasu; and Mayama, Masayoshi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic materials. 4,148,644, Cl. 96-39.000.
Ohta, Masafumi; Hashimoto, Mitsuru; and Kozima, Akio, to Ricoh Co., Ltd. Photoconductive sensitive material with a trinitro-11-indeno[1,2-b]quinoxaline-11-one. 4,148,638, Cl. 96-1.50R.

Ohya, Yoshinobu: *See*—
Shima, Keizo; Harada, Yuichi; and Ohya, Yoshinobu, 4,148,775, Cl. 260-30.80R.
Oji Paper Co., Ltd.: *See*—
Itoh, Hirosi; Hata, Yukinori; and Itoh, Fumio, 4,148,655, Cl. 96-91.00N.
Oka, Yoshikazu; Itoh, Katsumi; Miyake, Akio; and Hirata, Minoru, to Takeda Chemical Industries, Ltd. 1,2-Dihydronaphthalene derivatives and pharmaceutical composition. 4,148,897, Cl. 424-250.000.
Okamoto, Michio; Washizawa, Shigetaka; and Kohsaka, Osamu, to Nippon Columbia Kabushikikaisha. Crosstalk compensating circuit. 4,149,036, Cl. 179-15.0BT.
Okamura, Seizo: *See*—
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Olin Corporation: *See*—
Parikh, Prakash D., 4,148,633, Cl. 75-154.000.
Smith, Warren F., Jr., 4,148,634, Cl. 75-157.500.
Smith, Warren F., Jr., 4,148,635, Cl. 75-157.500.
Oliver, Robert J., to Zimm-Zamm Aktiengesellschaft. Stands for tubular articles. 4,148,455, Cl. 248-524.000.
Olson, Gary L.; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Process for producing vitamin A. 4,148,829, Cl. 260-601.00R.
Olympus Optical Co., Ltd.: *See*—
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Nishikawa, Masaji; and Kasuga, Muneo, 4,148,577, Cl. 355-35.00C.
Tsuda, Hiroshi, 4,148,581, Cl. 355-71.000.
Utsugi, Mikio, 4,148,307, Cl. 128-4.000.
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Orth, Gunther, to Wolf-Gerate GmbH. Penetrating machine. 4,148,362, Cl. 172-22.000.
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Oscarson, John R.: *See*—
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Brown, David L.; Ostborg, John; and Wambsgans, Robert O., 4,148,721, Cl. 209-211.000.
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Yoneoka, Mikio; and Osugi, Minoru, 4,149,009, Cl. 560-239.000.
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Ou-Yang, Paul H.: *See*—
Kochel, Leroy J.; Kalweit, Harvey W.; Gonzales, Arthur D.; Church, Clyde L.; and Ou-Yang, Paul H., 4,148,133, Cl. 29-571.000.
Ouchi Shinko Kagaku Kogyo Kabushiki Kaisha: *See*—
Torii, Sigeru; Tanaka, Hideo; and Mishima, Kiyoshi, 4,148,697, Cl. 204-78.000.
Ousset, Robert A.: *See*—
Kehren, Jean-Paul A.; and Ousset, Robert A., 4,148,674, Cl. 149-2.000.
Outokumou Oy: *See*—
Fugleberg, Sigmund P.; and Poijarvi, Jaakko T. I., 4,148,862, Cl. 423-106.000.
Outokumpu Oy: *See*—
Mustikka, Lauri A., 4,148,398, Cl. 209-668.000.
Owades, Joseph L., to S. S. Steiner, Inc. Method for treating the skin with extracts of hops. 4,148,873, Cl. 424-59.000.
Owens, Frederick H.; and Clovis, James S., to Rohm and Haas Company. Acrylic modifiers for polycarbonamides. 4,148,846, Cl. 260-885.000.
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Spofford, Walter R., 4,148,220, Cl. 73-362.0AR.
Paar, Alois; and Konig, Fritz, to Losenhausen Maschinenbau AG. Soil compacting apparatus. 4,149,253, Cl. 364-505.000.
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Pachmayr, Frank A.; and Farrar, Jack R., 4,148,149, Cl. 42-71.00P.
Pack River Company, The: *See*—
Critchell, Kenneth G.; and Brown, James M., Jr., 4,148,344, Cl. 144-3.00R.
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Kaartinen, Niilo H., 4,148,608, Cl. 23-230.0PC.
Palamidessi, Giorgio; Zarini, Franco; Franceschi, Giovanni; Schioppacassi, Giovanna; and Arcamone, Federico, to Societa Farmaceutici Italia S.p.A. 3,7-Disubstituted cephalosporins. 4,148,996, Cl. 544-26.000.
Palmer, Archibald E.; Macquart, Raymond G.; and Karaiste, Risto T. T., to John Fairfax & Sons Limited. Printing plate inspection apparatus. 4,149,187, Cl. 358-106.000.
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Nelson, Gerald B.; and Prindle, William J., 4,148,952, Cl. 428-2.000.
Pape, Hans; and Siebel, Joseph, to Ekoperl GmbH. Process for dust reduction treatment of expanded perlite. 4,148,941, Cl. 427-214.000.
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Collins, Paul W.; and Pappo, Raphael, 4,149,006, Cl. 560-53.000.
Paquette, Elmer G.; and Guenther, Karl R., to Bjorksten Research Laboratories, Inc. Non-woven articles made from continuous filaments coated in high density fog with high turbulence. 4,148,676, Cl. 156-181.000.
Paraskos, John A.; and Smith, Edward W., to Gulf Research & Development Company. Process for separating tar and solids from coal liquefaction products using a halogenated aliphatic solvent. 4,148,716, Cl. 208-177.000.
Parato, Vito J., to Cutler-Hammer, Inc. Wideband tracking generator for harmonic mixing receivers. 4,149,122, Cl. 325-363.000.
Parikh, Prakash D., to Olin Corporation. Minimization of edge cracking during hot rolling of silicon-tin bronzes. 4,148,633, Cl. 75-154.000.
Parks, Earl R., Jr. Row crop planter. 4,148,414, Cl. 221-278.000.
Parlato, Philip. Solar heating apparatus and mounting therefor. 4,148,296, Cl. 126-270.000.
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Benden, Robert S.; and Parzuchowski, Richard S., 4,148,275, Cl. 118-49.500.
Pascaud, Xavier: *See*—
Vincent, Michel; Remond, Georges; and Pascaud, Xavier, 4,148,912, Cl. 424-295.000.
Pastorius, Louis E. Code symbol inspection arrangement. 4,149,070, Cl. 235-495.000.
Patchornik, Abraham: *See*—
Haviv, Fortuna; and Patchornik, Abraham, 4,148,997, Cl. 544-26.000.
Nudelman, Abraham; and Patchornik, Abraham, 4,148,998, Cl. 544-27.000.
Patel, Kiritkumar R.: *See*—
Collins, Marcus H.; and Patel, Kiritkumar R., 4,148,681, Cl. 156-405.00R.
Collins, Marcus H.; and Patel, Kiritkumar R., 4,148,682, Cl. 156-416.000.
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Sodini, Giancarlo; Canella, Marco; and Patricelli, Alberto, 4,148,928, Cl. 426-430.000.
Patterson, Robert A., to Rockwell International Corporation. Communications bus monitor. 4,149,241, Cl. 364-200.000.
Patterson, Tommy W. Thermal flue apparatus. 4,148,302, Cl. 126-307.00R.
Paulus, Peter V.; and Jackson, Norman C., to Standard Products Company, The. Windlace carrier. 4,148,961, Cl. 428-358.000.
Pavkovich, John M.; and Nunan, Craig S., to Varian Associates, Inc. Tomographic apparatus and method for reconstructing planar slices from non-absorbed and non-scattered radiation. 4,149,247, Cl. 364-414.000.
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Payne, Trevor G., to Sandoz Ltd. Derivatives of oxaminic acids and esters. 4,148,916, Cl. 424-309.000.
Pearson, Keith: *See*—
Bell, William; Pearson, Keith; and Rendell, Richard W., 4,149,018, Cl. 568-684.000.
Pedersen, Derald A.: *See*—
James, James A.; and Pedersen, Derald A., 4,149,238, Cl. 364-200.000.
Peek, Willis M.: *See*—
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Peelle Company, The: *See*—
Heisler, William C., 4,148,404, Cl. 414-259.000.
Pellar, Ronald J.; and Green, Leland D., to Xerox Corporation. Electronic halftone generator. 4,149,183, Cl. 358-75.000.
Pellegrini, John F., Jr.; and Thayer, Helen I., to Gulf Research & Development Company. Dithiophosphorylated copolymers of aziridineethyl acrylates or methacrylates and alkyl acrylates or methacrylates. 4,148,981, Cl. 526-16.000.
Pemsler, J. Paul: *See*—
Rappas, Alkis S.; and Pemsler, J. Paul, 4,148,813, Cl. 260-439.00R.
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Rappas, Alkis S.; and Pemsler, J. Paul, 4,148,816, Cl. 260-439.00R.
Pendlebury, Bruce C. Positive action fishing gaff. 4,148,512, Cl. 294-26.000.
Pennwalt Corporation: *See*—
Reifenberg, Gerald H., 4,148,814, Cl. 260-429.700.
Perlin, Boris A.: *See*—
Kulabukhov, Vadim A.; Allakhverdov, Eduvard R.; Perlin, Boris A.; Shteinberg, Grigory S.; Afanasiev, Anatoly I.; Sheludko, Valentin V.; Nudelman, Boris I.; Volkov, Valery G.; Salomasov, Vasily F.; and Startsev, Jury V., 4,148,601, Cl. 432-109.000.
Personal Products Company: *See*—
Loyer, Michael, 4,148,317, Cl. 128-263.000.
Peters, Philip H., Jr.; and Wilbur, Donald A., to United States of America, Army. Radar jamming transmitter. 4,149,167, Cl. 343-18.00E.
Peters, Richard W., to Industrial Research Products, Inc. Priority mixer control. 4,149,032, Cl. 179-1.0CN.
Petersen, Egon N.; Vollkommer, Norbert; Blumenfeld, Georg; Richtzenhain, Hermann; and Vogt, Wilhelm, to Dynamit Nobel Aktien-

gesellschaft. Halogen-containing unsaturated bis-esters. 4,149,008, Cl. 560-221.000.
Petree, Edwyn H.: *See—*
Becker, Edward W.; Bender, Thomas A. E.; Mahr, Peter F.; and Petree, Edwyn H., 4,148,138, Cl. 29-749.000.
Petropoulsos, Nikolaostzakos J.; and Carvouniaris, George D. Safety electrical receptacle. 4,148,536, Cl. 339-42.000.
Petrovic, Louis J.: *See—*
Agarwal, Jagdish C.; Giberti, Richard A.; and Petrovic, Louis J., 4,148,615, Cl. 55-73.000.
Petrzilka, Theodor; Schmid, Gerard; and Prasad, Kapa K., to Petrzilka, Theodor. Process for preparing cephem lactones for cephalosporin-type antibiotics. 4,148,995, Cl. 544-15.000.
Pettinato, F. Edward; Herman, Maynard A.; and Koczak, Steven, to Brown & Williamson Tobacco Corp. Process for hot smoking fish. 4,148,925, Cl. 426-235.000.
Pevzner, Mark G.; Pinchuk, Nikolai I.; Krukover, Pavel I.; and Lemchuzhnikov, Nikolai K., to Nauchno-Issledovatelsky I Konstruktorsko-Teknologichesky Institut Teploenergeticheskogo Priborostroenia. Thermal bimetallic strip relay. 4,149,138, Cl. 337-372.000.
Peyroux, Jacques M.: *See—*
Koch, Michel G.; and Peyroux, Jacques M., 4,148,898, Cl. 424-256.000.
Pfingston, William, to Polaroid Corporation. Diffusion transfer elements comprising U V light absorbers. 4,148,648, Cl. 96-73.000.
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Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, 4,148,920, Cl. 424-319.000.
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Routien, John B.; Shibakawa, Riichiro; and Tone, Junsuke, 4,148,880, Cl. 424-119.000.
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Pharmacia Fine Chemicals AB: *See—*
Carlsson, Jan P. E.; Axen, Rolf E. A. V.; Drevin, Hakan N. Y.; and Lindgren, Goran E. S., 4,149,003, Cl. 546-261.000.
Philberth, Bernhard: *See—*
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Philberth, Karl; and Philberth, Bernhard. Core lamination for shell-type cores, preferably for transformers. 4,149,136, Cl. 336-217.000.
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Schelfaut, Francois L.; Vanassche, Willy J.; Philippaerts, Herman A.; and Duville, Rene O., 4,148,647, Cl. 96-59.000.
Phillips, David C.; and Smith, James D. B., to Westinghouse Electric Corp. Protecting electrical apparatus with gas generating compounds. 4,149,161, Cl. 340-632.000.
Phillips, James T.; and Kandl, Henry J. Method for repairing vehicle bodies. 4,148,122, Cl. 29-401.00E.
Phillips, James T., Jr. Trundle loop and method of detachably connecting same to a hoop. 4,148,153, Cl. 46-220.000.
Phillips Petroleum Company: *See—*
Christensen, Harold V., 4,148,361, Cl. 169-66.000.
Engle, Charles J., 4,148,217, Cl. 73-60.100.
Hunt, Harold R.; and Mills, King L., 4,148,744, Cl. 252-182.000.
Malick, Emil A., 4,148,691, Cl. 195-142.000.
Meister, John J., 4,148,736, Cl. 252-8.55R.
Nash, Larry L., 4,148,771, Cl. 260-27.0BB.
Nielsen, Richard H.; McKay, Dwight L.; and Dale, Glenn H., 4,148,712, Cl. 208-78.000.
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Piber, Earl T., to Cutler-Hammer, Inc. Safety-disconnect power tool switch. 4,149,052, Cl. 200-153.0LA.
Pichler, Alfred: *See—*
Berghof, Winfried; Pichler, Alfred; and Raeth, Rainer, 4,149,205, Cl. 360-123.000.
Pidgeon, Joseph F. Puzzle. 4,148,489, Cl. 273-160.000.
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Pietruska, Klaus F. A.: *See—*
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Pilkington P.E. Limited: *See—*
Thompson, George V., 4,148,548, Cl. 350-1.300.
Pilot Man-Nen-Hitsu Kabushiki Kaisha: *See—*
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Pinchuk, Nikolai I.: *See—*
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Pine, Lloyd A., to Exxon Research & Engineering Co. Redispersion of noble metals on supported catalysts. 4,148,750, Cl. 252-416.000.
Pioneer Electronic Corporation: *See—*
Iwaoka, Takeshi; and Koike, Shigeki, 4,149,158, Cl. 340-568.000.
Pirz, Frank C., to Bell Telephone Laboratories, Incorporated. Data interface apparatus for multiple sequential processors. 4,149,242, Cl. 364-200.000.
Pitney-Bowes Inc.: *See—*
Bujese, David P., 4,148,578, Cl. 355-8.000.
Lorenzo, John L., 4,148,434, Cl. 235-435.000.
Pitroda, Satyan G.; Min, Byung C.; and Chaddha, Tej N., to Wescom Switching, Inc. Method and apparatus for fault detection in PCM muliplexed system. 4,149,038, Cl. 179-15.0BF.
Pitt, Colin G.; and Schindler, Anton E. Sustained subdermal delivery ofdrugs using poly(ε-caprolactone) and its copolymers. 4,148,871, Cl. 424-19.000.
Plattner, Jacob J., to Pfizer Inc. 2-Descarboxy-2-(tetrazol-5-yl) 11-desoxy-15-thiaprostaglandins. 4,148,804, Cl. 260-308.00D.
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Holter, Karl; Schrewe, Hans; Diederich, Gerd; and Pleschiutschnigg, Fritz P., 4,148,145, Cl. 33-143.00L.
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Harrison, Ronald A.; and Hutchings, Brian E., 4,149,214, Cl. 361-256.000.
Pluss, Kurt; and DeMartin, Bruno R., to Cilag-Chemie A.G. (N-Substituted pyridyl)-alkyl sulfonic acid betaines as electroplating additives. 4,148,797, Cl. 546-344.000.
PMCMA Research Group: *See—*
Lankard, David R.; and Hedden, Walter A., 4,148,660, Cl. 106-38.300.
Pobgee, Peter J., to National Research Development Corporation. Graphical input apparatus for electrical equipment. 4,149,029, Cl. 178-18.000.
Poijarvi, Jaakko T. I.: *See—*
Fugleberg, Sigmund P.; and Poijarvi, Jaakko T. I., 4,148,862, Cl. 423-106.000.
Poirier, Raymond; and Szydlo, Nicolas, to Thomson-CSF. Monolithic structure for storing electrical charges. 4,149,095, Cl. 307-400.0ET.
Polaroid Corporation: *See—*
Johnson, Bruce K., 4,148,574, Cl. 354-195.000.
Lindholm, Edward P., 4,149,010, Cl. 560-262.000.
Pfingston, William, 4,148,648, Cl. 96-73.000.
Politechmika Slaska Im. Wincentego Pstrowskiego: *See—*
Gierek, Adam; Bajka, Lech; and Kolpak, Jan, 4,148,942, Cl. 427-241.000.
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Polychrome Corporation: *See—*
Golda, Eugene; Wilkes, Alan L.; and Chu, Simon L., 4,148,649, Cl. 96-75.000.
Pomona Service & Supply Co., Inc.: *See—*
Zike, Donald R., 4,148,169, Cl. 53-573.000.
Porter, Townsend H., Jr.; and Schopp, Robert E., to International Business Machines Corporation. Cartridge and flexible magnetic disk assembly. 4,149,207, Cl. 360-133.000.
Post Office, The: *See—*
Card, Stuart E.; and Griffiths, David F., 4,149,041, Cl. 179-27.0CA.
Potain: *See—*
Noly, Jean, 4,149,115, Cl. 318-301.000.
Potts, Robert G. Cone labeling, separating and restacking apparatus and method. 4,148,683, Cl. 156-556.000.
Pouderoux, Pierre, to Stein Industrie S.A. Auxiliary cooling device for the primary fluid heat exchanger of a nuclear reactor. 4,148,686, Cl. 176-38.000.
Powers, David F. Flare holder apparatus. 4,148,258, Cl. 102-37.400.
PPG Industries, Inc.: *See—*
Breininger, J. Shannon; and Greenberg, Charles B., 4,148,940, Cl. 427-226.000.
Marchetti, Joseph R.; Zwack, Robert R.; and Jerabek, Robert D., 4,148,772, Cl. 260-29.2EP.
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Larson, Charles; Van Nocker, Melvin; and Sutton, Robert, 4,148,392, Cl. 198-498.000.
Prakken, Bouwe. Apparatus for discarding leaky packages from a row of filled sealed packages. 4,148,213, Cl. 73-45.400.
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Petrzilka, Theodor; Schmid, Gerard; and Prasad, Kapa K., 4,148,995, Cl. 544-15.000.
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von Bonin, Wulf; Preis, Lothar; and von Gizycki, Ulrich, 4,148,844, Cl. 260-874.000.
Price, Samuel T., to Enterprise Machine and Development Corporation. Yarn texturing air jet baffle. 4,148,116, Cl. 28-254.000.
Prikhna, Alexei I.: *See—*
Fedoseev, Dmitry V.; Deryagin, Boris V.; Bakul, Valentin N.; Prikhna, Alexei I.; Gerasimenko, Valentin K.; Poltoratsky, Vladimir G.; Nikitin, Jury I.; Vnukov, Stanislav P.; and Varnin, Valentin P., 4,148,964, Cl. 428-403.000.
Prindle, William J.: *See—*
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Prioste, Jerry E., to Motorola, Inc. Programmable multi-bit shifter. 4,149,263, Cl. 364-900.000.
Process Systems, Inc.: *See—*
Hutton, Roger S., 4,148,340, Cl. 137-599.000.
Procor Limited: *See—*
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Procter & Gamble Company, The: *See—*
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Smith, Donald E., 4,148,874, Cl. 424-66.000.
Smith, Donald E., 4,148,887, Cl. 424-180.000.
Smith, Donald E., 4,148,893, Cl. 424-195.000.
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Produits Chimiques Pechiney-Saint-Gobain: *See*—
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Promac Corporation: *See*—
Prosen, Gildo G., 4,148,284, Cl. 123-78.00C.

Prosen, Gildo G., to Promac Corporation. Variable compression ratio engine. 4,148,284, Cl. 123-78.00C.

Provost, Wayne A.: *See*—
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Pruett, Roy L.; and Smith, James A., to Union Carbide Corporation. Hydroformylation of olefins. 4,148,830, Cl. 260-604.0HF.

Prunier, Louis J., to American Optical Corporation. Lens surfacing tool and tool holder. 4,148,160, Cl. 51-168.000.

Puccio, Guy S., to Acme Highway Products Corporation. Concourse seal. 4,148,167, Cl. 52-396.000.

Pullman Incorporated: *See*—
Becker, Colman L., 4,148,866, Cl. 423-359.000.

Putney, Richard K., to Hercules Incorporated. Crystalline nickel chelate of 1-nitroso-2-naphthol and process for producing same. 4,148,666, Cl. 106-288.00Q.

Pyle Pattern & Maf. Co.: *See*—
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Quadri, Farooq M., to Burroughs Corporation. Associative memories using magnetic bubbles. 4,149,267, Cl. 365-12.000.

Quere, Hendrik K. Casting device. 4,148,353, Cl. 164-341.000.

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Raeth, Rainer: *See*—
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Rahman, Abdul R.: *See*—
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Rahn, Paul, to Meyer, Roth & Pastor Maschinenfabrik GmbH. Successive welding of immediately consecutive chain links. 4,149,058, Cl. 219-51.000.

Rains, Lyle V., to Atari, Inc. Driving games method for automatically controlled cars. 4,148,485, Cl. 273-86.00B.

Rais, Arnold; and Lussi, Andre, to M. Schaerer A.G. Operating table for medical purposes. 4,148,472, Cl. 269-325.000.

Ramot University Authority for Applied Research & Industrial Development Ltd.: *See*—
Bar-Chaim, Nadav; Seidman, Ady; and Wiener-Avnear, Eliezer, 4,149,073, Cl. 250-201.000.

Rampart, Guido: *See*—
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Rangaire Corporation: *See*—
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Rank Organisation Ltd., The: *See*—
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Rao, V. Durga Nageswar, to Ford Motor Co. Regenerator and drive gear. 4,148,354, Cl. 165-8.000.

Rappas, Alkis S.; and Pemsler, J. Paul, to Kennecott Copper Corporation. Nickel and cobalt solvent extraction with mercaptides. 4,148,813, Cl. 260-439.00R.

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Rasberger, Michael; Rody, Jean; and Gugumus, Francois, to Ciba-Geigy Corporation. Hydroxybenzylmalonic acid derivatives. 4,148,783, Cl. 260-45.80N.

Rasberger, Michael: *See*—
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Raschle, Josef, to Heberlein Maschinenfabrik AG. Devices for determining the helix angle of twisted threads during false-twist texturing. 4,148,178, Cl. 57-264.000.

Ratte, Jacques; Duchesne, Gonzague; and Carignan, Pierre, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defense. Insulation system for rocket motors. 4,148,675, Cl. 156-91.000.

Ray, Ranjan: *See*—
Tanner, Lee E.; and Ray, Ranjan, 4,148,669, Cl. 148-3.000.

Raychem Corporation: *See*—
Lyons, Bernard J., 4,148,747, Cl. 252-400.00A.

Raytheon Company: *See*—
Dallos, Andras, 4,149,110, Cl. 315-107.000.

RCA Corporation: *See*—
Credelle, Thomas L.; Hannan, William J.; and Spong, Fred W., 4,148,636, Cl. 96-1.100.
de Wolf, David A.; and Catanese, Carmen A., 4,149,106, Cl. 313-400.000.
Eaton, Sargent S., Jr., 4,149,232, Cl. 363-60.000.
Glogolja, Miroslav, 4,149,124, Cl. 330-298.000.
Marks, Bruce G., 4,148,541, Cl. 339-144.00T.
Russo, Paul M., 4,149,152, Cl. 340-703.000.
Siryj, Bohdan W., 4,148,575, Cl. 354-299.000.
Stark, John, Jr., 4,149,209, Cl. 361-91.000.

Reading Door Closer Corp.: *See*—
Lieberman, Sideny, 4,148,111, Cl. 16-59.000.

Reagan, William J.: *See*—
Chen, Nai Y.; and Reagan, William J., 4,148,835, Cl. 260-682.000.

Redmond, John D., Jr.; and Tone, Robert P., to Gates Rubber Company, The. Belt sprocket. 4,148,225, Cl. 74-243.00R.

Redzinski, Gilbert E., to Clark Equipment Company. Automatic transmission control. 4,148,231, Cl. 74-866.000.

Reed, Robert D.; and Goodnight, Hershel E., to John Zink Company. Method to mix liquid fuels with diluent gas for a gaseous fuel burner. 4,148,599, Cl. 431-11.000.

Regalbuto, John A.: *See*—
Orrill, Larry M.; Regalbuto, John A.; Wilson, Michael L.; and Rutledge, Wayne L., 4,148,257, Cl. 102-24.0HC.

Reibel, Peter R. Personal hygiene device. 4,148,309, Cl. 128-24.00A.

Reich, Wendell L. Well drilling apparatus. 4,148,367, Cl. 175-171.000.

Reichelderfer, Richard F.: *See*—
Battey, James F.; Bersin, Richard L.; Reichelderfer, Richard F.; and Welty, Joseph M., 4,148,705, Cl. 204-192.00E.

Reichenberger, Helmut, to Siemens Aktiengesellschaft. Cathode for polarographic measurements in physiological medium. 4,148,305, Cl. 128-2.00E.

Reid, Neil M.: *See*—
French, John B.; Reid, Neil M.; and Buckley, Janette A., 4,148,196, Cl. 62-55.500.

Reid, William R., Jr.: *See*—
Karl, Robert D.; and Reid, William R., Jr., 4,148,107, Cl. 9-8.00P.

Reifenberg, Gerald H., to Pennwalt Corporation. Process for preparing monohydrocarbyltin trihalides. 4,148,814, Cl. 260-429.700.

Reins, Edward R.; and Herman, Robert W., to United States of America, Navy. Digital plotting system for graphic information. 4,149,164, Cl. 340-701.000.

Reins, Edward R.: *See*—
Herman, Robert W.; and Reins, Edward R., 4,149,165, Cl. 340-740.000.

Rek, Johannes H. M.: *See*—
Duin, Hendrik J.; van Dam, Antonius F.; and Rek, Johannes H. M., 4,148,930, Cl. 426-603.000.

Remington Arms Company, Inc.: *See*—
Ervine, Albert W. G., 4,148,243, Cl. 86-23.000.

Remond, Georges: *See*—
Vincent, Michel; Remond, Georges; and Pascaud, Xavier, 4,148,912, Cl. 424-295.000.

Remy, David C.: *See*—
Atkinson, Joseph G.; Rooney, Clarence S.; Belanger, Patrice C.; and Remy, David C., 4,148,903, Cl. 424-267.000.

Rendell, Richard W.: *See*—
Bell, William; Pearson, Keith; and Rendell, Richard W., 4,149,018, Cl. 568-684.000.

Renoux, Gerard E.; and Renoux, Micheline, to Institut Merieux. Immunostimulant medicine. 4,148,885, Cl. 424-162.000.

Renoux, Micheline: *See*—
Renoux, Gerard E.; and Renoux, Micheline, 4,148,885, Cl. 424-162.000.

Reuschel, Konrad; Dietze, Wolfgang; and Rucha, Ulrich, to Siemens Aktiengesellschaft. Process for depositing elemental silicon semiconductor material from a gas phase. 4,148,931, Cl. 427-8.000.

Reuter, Franz G.: *See*—
Hilterhaus, Karl H.; and Reuter, Franz G., 4,148,734, Cl. 264-48.000.

Reuter Technologie GmbH: *See*—
Hilterhaus, Karl H.; and Reuter, Franz G., 4,148,734, Cl. 264-48.000.

Revy von Belvard, Peter: *See*—
Freudenschuss, Otto; Kantner, Otto; and Revy von Belvard, Peter, 4,148,566, Cl. 352-27.000.

Rexnord Inc.: *See*—
Bradbury, Bernard G., 4,148,386, Cl. 193-37.000.

Reyner, Peter J.; and Henehan, Patrick A.; to Mars, Inc. Testing apparatus for non-circular coins. 4,148,388, Cl. 194-102.000.

Reynolds, John L.; Sappington, Jack L.; and Sullivan, Lawrence J., to Midland Tank Rental Company. Apparatus and method for dispensing and retrieving flexible pipe. 4,148,445, Cl. 242-86.50R.

Reytblatt, Zinovy. Energy conversion devices. 4,148,292, Cl. 123-245.000.

Rhodes, Barry V., Sr.: *See*—
Lents, James M.; and Rhodes, Barry V., Sr., 4,148,293, Cl. 126-270.000.

Rhodes, Charles R.: *See*—
Harwell, Roy M., Jr.; and Hill, Richard T., 4,148,482, Cl. 273-67.00A.

Rhone-Poulenc-Textile: *See*—
Bourrain, Paul; and Giroud, Pierre, 4,148,963, Cl. 428-392.000.

Ricci, Antonio, to Istituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A. Method for measuring antistreptolysin concentration in blood. 4,148,609, Cl. 23-230.00B.

Richards, George B., to Fluid Device Corporation. Liquid level control sytem. 4,148,334, Cl. 137-389.000.

Richards, Henry H.: *See*—
Cantoni, Giulio L.; Chiang, Peter K.; and Richards, Henry H., 4,148,888, Cl. 424-180.000.

Richmond, Martin R.; and Cann, Alfred J., to Sanders Associates, Inc. Attenuator. 4,149,123, Cl. 328-168.000.
Richtarcsik, Paul S.: *See*—
Enemark, Robert B.; and Richtarcsik, Paul S., 4,149,162, Cl. 340-636.000.
Richter, Claus, to Endress & Hauser GmbH & Co. Circuit arrangement for linearizing the output signal of a test sensor. 4,149,120, Cl. 324-132.000.
Richter, Hermann; and Weber, Wendelin, to U.S. Philips Corporation. Method of manufacturing an electromagnet. 4,149,132, Cl. 335-262.000.
Richtzenhain, Hermann: *See*—
Petersen, Egon N.; Vollkommer, Norbert; Blumenfeld, Georg; Richtzenhain, Hermann; and Vogt, Wilhelm, 4,149,008, Cl. 560-221.000.
Rickard, Christopher G.: *See*—
Dunlop, Alfred N.; and Rickard, Christopher G., 4,148,776, Cl. 260-33.40R.
Ricoh Co., Ltd.: *See*—
Abe, Michiharu; and Funato, Hiroyoshi, 4,149,269, Cl. 365-215.000.
Kubota, Tomio; Kojima, Akio; and Kaneko, Yoshikazu, 4,148,637, Cl. 96-1.50N.
Ohta, Masafumi; Hashimoto, Mitsuru; and Kozima, Akio, 4,148,638, Cl. 96-1.50R.
Riecker, Johann G.: *See*—
Schulte, Fritz; Riecker, Johann G.; and Schroter, Horst, 4,148,694, Cl. 202-262.000.
Riedle, Rudolf: *See*—
Frey, Volker; Muller, Horst; and Riedle, Rudolf, 4,148,818, Cl. 260-448.20E.
Riehle, Harald. Planning board. 4,148,148, Cl. 40-594.000.
Riffe, Delmar R., to Westinghouse Electric Corp. Remote access manipulator. 4,148,403, Cl. 414-2.000.
Rigterink, Raymond H., to Dow Chemical Company, The. N-[(optionally substituted phenylamino)carbonyl] pyridine carboxamides and insecticidal use thereof. 4,148,902, Cl. 424-266.000.
Rindfleisch, Volker: *See*—
Schliepe, Reinhard; Rindfleisch, Volker; Muller, Karl-Heinz; and Thieringer, Hans-Martin, 4,149,074, Cl. 250-311.000.
Risk, Daniel W., to Maxton Manufacturing Company. Hydraulic valve control system. 4,148,248, Cl. 91-446.000.
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Ritter, Gerhard: *See*—
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Ritter, Josef: *See*—
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Ritter, Klaus: *See*—
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Robert Bosch GmbH: *See*—
Grassle, Alfred; Schnurle, Hans; and Wilfert, Thomas, 4,148,282, Cl. 123-32.0EG.
Knorreck, Peter, 4,148,290, Cl. 123-140.00R.
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Roberts, Lincoln E.: *See*—
Fleischhacker, James E.; Roberts, Lincoln E.; and Willette, Albert D., 4,148,118, Cl. 29-33.00K.
Robillard, Edward G., to Cincinnati Milacron-Heald Corp. Grinding machine. 4,148,159, Cl. 51-165.880.
Rockwell International Corporation: *See*—
Patterson, Robert A., 4,149,241, Cl. 364-200.000.
Rodondi, Andrew F., to General Motors Corporation. Elastomeric electrical connector. 4,148,538, Cl. 339-91.00R.
Rody, Jean: *See*—
Rasberger, Michael; Rody, Jean; and Gugumus, Francois, 4,148,783, Cl. 260-45.80N.
Roelants, Jacques, to Compagnie Industrielle des Lasers. Laser telemeter. 4,148,584, Cl. 356-5.000.
Roespel, Gustav; and Scheffler, Horst, to Siemens Aktiengesellschaft. Electrical coil and method of producing the same. 4,149,135, Cl. 336-65.000.
Rogers, Bernard T. Production of woodwool. 4,148,345, Cl. 144-185.000.
Rogers, John A.: *See*—
Mathews, Bernard C.; and Rogers, John A., 4,148,174, Cl. 56-12.700.
Rohe, Hermann: *See*—
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Rohm and Haas Company: *See*—
Owens, Frederick H.; and Clovis, James S., 4,148,846, Cl. 260-885.000.
Winey, Donald A., 4,148,987, Cl. 526-316.000.
Rohr Industries, Incorporated: *See*—
McKee, Laird W., 4,148,501, Cl. 280-711.000.
Rollmann, Louis D., to Mobil Oil Corporation. ZSM-5 particle containing aluminum-free shells on its surface. 4,148,713, Cl. 208-111.000.
Romanov, Nikolai T., deceased: *See*—
Gorodissky, Leonid G.; and Romanov, Nikolai T., deceased, 4,148,493, Cl. 277-12.000.
Romanova, Anastasia I., administrator: *See*—
Gorodissky, Leonid G.; and Romanov, Nikolai T., deceased, 4,148,493, Cl. 277-12.000.
Roome, Richard: *See*—
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Rooney, Clarence S.: *See*—
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Roques, Henri; and Girou, Andre, to Produits Chimiques Ugine Kuhlmann. Scale-inhibiting compositions for aqueous solutions. 4,148,728, Cl. 210-58.000.
Rose, Jerry D.: *See*—
Temple, Carroll G., Jr.; Elliott, Robert D.; Rose, Jerry D.; and Montgomery, John A., 4,148,999, Cl. 544-258.000.
Rosenstock, Guenther: *See*—
Heinzl, Joachim; Kattner, Erich; and Rosenstock, Guenther, 4,149,172, Cl. 346-140.00R.
Rossmann, Axel, to MTU-Motoren und Turbinen-Union Munchen GmbH. Method for manufacturing a thermally high-stressed cooled component. 4,148,350, Cl. 164-132.000.
Rostek, Manfred: *See*—
Schwuger, Milan J.; Smolka, Heinz; and Rostek, Manfred, 4,148,603, Cl. 8-137.000.
Roth, Herbert R.: *See*—
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Roussel Uclaf: *See*—
Nedelec, Lucien; Pierdet, Andre; Dumont, Claude; and Kannengiesser, Marie-Helene, 4,148,919, Cl. 424-33.00D.
Routien, John B.: *See*—
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Routien, John B.; Shibakawa, Riichiro; and Tone, Junsuke, 4,148,880, Cl. 424-119.000.
Rowley, Robert J.: *See*—
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Roxburgh, Henry L.: *See*—
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Rubino, Andrew M.; Jones, John L.; and Bretschneider, Edward S., to Armour Pharmaceutical Company. Method of making basic zirconium-amino-acid gels. 4,148,812, Cl. 260-429.300.
Rucha, Ulrich: *See*—
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Rudolph, Gunter; and Hild, Werner, to Gesellschaft fur Kernforschung m.b.H. Method of preparing phosphoric acid esters for non-polluting storage by incorporation in polyvinyl chloride. 4,148,745, Cl. 252-301.10W.
Ruhf, Truman J., to GAF Corporation. Method for printing vinyl flooring with water based ink composition. 4,148,944, Cl. 427-256.000.
Rushing, John D. Protective guard for passenger vehicle. 4,148,504, Cl. 280-756.000.
Russell, Albert C. Carburetor float bowl with temperature and pressure responsive fuel level control means. 4,148,847, Cl. 261-39.00A.
Russo, Paul M., to RCA Corporation. Color display having selectable off-on and background color control. 4,149,152, Cl. 340-703.000.
Rutgerswerke Aktiengesellschaft: *See*—
Alscher, Arnold; Steinke, Heinrich; Collin, Gerd; and Storch, Gunter, 4,149,019, Cl. 568-804.000.
Rutledge, Wayne L.: *See*—
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S. S. Steiner, Inc.: *See*—
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Saffar, Serge H. A.: *See*—
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Saint-Gobain Industries: *See*—
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Saito, Koichi: *See*—
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Sakamoto, Yoshihiro: *See*—
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Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, 4,148,968, Cl. 428-454.000.
Sakouhi nee Cousin, Mireille: *See*—
Choay, Jean; and Sakouhi nee Cousin, Mireille, 4,148,877, Cl. 424-92.000.
Sakshaug, Eugene C.; and Ellis, Howard F., to General Electric Company. Method of treating metal oxide varistors to reduce power loss. 4,148,135, Cl. 29-621.000.
Sakurada, Kenichi; and Nishino, Takaichi, to Nissan Motor Company, Limited; and Tachikawa Spring Company, Limited. Seat backrest with adjustable lumbar supporter. 4,148,522, Cl. 297-284.000.
Salomasov, Vasily F.: *See*—
Kulabukhov, Vadim A.; Allakhverdov, Eduvard R.; Perlin, Boris A.; Shteinberg, Grigory S.; Afanasiev, Anatoly I.; Sheludko, Valentin V.; Nudelman, Boris I.; Volkov, Valery G.; Salomasov, Vasily F.; and Startsev, Jury V., 4,148,601, Cl. 432-109.000.

Sammis, John C., to Decor Design Corporation. D. C. Powered control circuit for energizing a cold cathode lamp. 4,149,113, Cl. 315-219.000.
Sanders Associates, Inc.: *See—*
Richmond, Martin R.; and Cann, Alfred J., 4,149,123, Cl. 328-168.000.
Sanders, David E.: *See—*
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Sanders, James M.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,148,826, Cl. 260-586.00G.
Sandoz Ltd.: *See—*
Altermatt, Ruedi, 4,148,791, Cl. 260-207.100.
Czok, Rudolf; Meingassner, Josef G.; Mieth, Hubert; and Schutze, Eberhard, 4,148,890, Cl. 424-181.000.
Funfschilling, Peter, 4,148,807, Cl. 260-343.210.
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Payne, Trevor G., 4,148,916, Cl. 424-309.000.
Sands, Robert W.: *See—*
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Sanpo Lock Co., Ltd.: *See—*
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Santilli, Arthur A.; and Morris, Robert L., to American Home Products Corporation. 3-[(Chlorophenylsulfonyl)methyl]-1,2,4-oxadiazole-5-carboxylic acid derivatives. 4,148,801, Cl. 260-307.00G.
Sanyo Electric Co., Ltd.: *See—*
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Sappington, Jack L.: *See—*
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Sarantakis, Dimitrois, to American Home Products Corporation. Analgesic polypeptide. 4,148,786, Cl. 260-112.50R.
Sargeant, Eugene F. Pipe cutting and welding apparatus. 4,148,467, Cl. 266-57.000.
Sargent Industries, Inc.: *See—*
Smith, Fred T., 4,148,517, Cl. 296-50.000.
Sarjeant, Peter T., to Westvaco Corporation. Neutralization of phosphoric acid activated carbon. 4,148,753, Cl. 252-423.000.
Sasahira, Seiichi;: *See—*
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Sasaki, Shigeo: *See—*
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Sasaki, Takashi: *See—*
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Satake, Toshihiko. Rice pearling machine with humidifier. 4,148,251, Cl. 99-519.000.
Sato, Akira: *See—*
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Sato, Kunio; and Kojima, Yasuyuki, to Hitachi, Ltd. Thermal recording method. 4,149,171, Cl. 346-1.000.
Satoh, Katsuya: *See—*
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Satoh, Mitsuo; Miyagawa, Norio; and Kobayashi, Juichi, to Mitsubishi Rayon Co., Ltd. Metallized plastic molded product and method for producing same. 4,148,967, Cl. 428-416.000.
Satou, Kazuo; and Ueno, Mitsuhiko, to Tokyo Shibaura Electric Co., Ltd. Complementary MOSFET device. 4,149,176, Cl. 357-42.000.
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Saunders, Thomas K.: *See—*
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Sauter, Gerald F.; and Honebrink, Roger W., to Sperry Rand Corporation. Multimode optic device. 4,148,556, Cl. 350-96.130.
Sawa, Kenneth B.; Peek, Willis M.; and Blanke, John D., to Beckman Instruments, Inc. Sampling system for engine exhaust gas analysis apparatus. 4,148,211, Cl. 73-23.000.
Sawano, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Lens barrel for camera having lens and camera displacing mechanisms on respective sides of stationary supporting structure. 4,148,562, Cl. 350-255.000.
Sayer, William J. Mouthpiece with a tongue retractor. 4,148,308, Cl. 128-15.000.
Sberze, Piero: *See—*
Doria, Gianfederico; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, 4,148,900, Cl. 424-263.000.
Scale Models Unlimited: *See—*
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Scarnecchia, O. Vincent. Method of and apparatus for drying and debarking logs. 4,148,346, Cl. 144-311.000.
Schade, Gerhard: *See—*
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Schallhorn, Thomas L.; and Beardmore, John M., to General Motors Corporation. Torsional vibration damper for a lock-up clutch. 4,148,200, Cl. 64-27.00C.
Scheer, Erich, to Kieninger & Obergfell, Fabrik fur Technische Laufwerke und Apparate. System for controlling the striking mechanism of a timepiece. 4,148,181, Cl. 58-13.000.
Scheffler, Horst: *See—*
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Schelfaut, Francois L.; Vanassche, Willy J.; Philippaerts, Herman A.; and Duville, Rene O., to AGFA-GEVAERT N.V. Reversal processing of exposed Lippman-emulsions. 4,148,647, Cl. 96-59.000.
Schenck, Peter C.: *See—*
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Scherber, Werner; and Dietrich, Gunther, to Dornier System GmbH. Solar collector panel and method of making. 4,148,294, Cl. 126-270.000.
Scherr, Rudolf: *See—*
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Scheuermann, Fanny: *See—*
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Schioppacassi, Giovanna: *See—*
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Schittenhelm, Rudolf, to Siemens Aktiengesellschaft. Tomographic apparatus for the production of transverse tomographic images. 4,149,080, Cl. 250-445.00T.
Schlacher, Rudolf W., to F tted Industries, Incorporated. Shoulder strap for musical instrument 4,148,423, Cl. 224-258.000.
Schlaich, Jorg: *See—*
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Schliepe, Reinhard; Rindfleisch, Volker; Muller, Karl-Heinz; and Thieringer, Hans-Martin, to Siemens Aktiengesellschaft. Detector for a scanning transmission-type electron microscope. 4,149,074, Cl. 250-311.000.
Schlosser, Peter: *See—*
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Schmelz, Helmut; and Schwaen, Werner, to Siemens Aktiengesellschaft. Capacitor dielectric with internal barrier layers and a method for its production. 4,149,173, Cl. 357-10.000.
Schmid, Gerard: *See—*
Petrzilka, Theodor; Schmid, Gerard; and Prasad, Kapa K., 4,148,995, Cl. 544-15.000.
Schmid, Ulrich: *See—*
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Schmidt, Albert, to Schmidt-Ankum Agrar- und Zwecksbau. Broiler batteries. 4,148,276, Cl. 119-18.000.
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Schmidt, Walter; and Riss, Gerhard, to Durkoppwerke GmbH. Method of and apparatus for the production of button-holes on a double lock stitch buttonhole sewing machine. 4,148,268, Cl. 112-264.100.
Schmitt, Frederick L.: *See—*
Kamath, Venkatesh; Mookherjee, Braja D.; and Schmitt, Frederick L., 4,149,020, Cl. 568-838.000.
Schnabele, Werner; and von Malottki, Paul, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Apparatus for braking a free piston, which is driven at high acceleration within a tube. 4,148,244, Cl. 89-1.701.
Schneider, Alan A.; Bowser, George C.; and Foxwell, Lurman H., to Catalyst Research Corporation. Lithium iodine primary cells having novel pelletized depolarizer. 4,148,975, Cl. 429-174.000.
Schneider, Siegfried; and Niederprum, Hans, to Bayer Aktiengesellschaft. Production of synthetic fluorspar. 4,148,867, Cl. 423-490.000.
Schnurle, Hans: *See—*
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Schoenewaldt, Erwin F.: *See—*
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Schopp, Robert E.: *See—*
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Schorr, Murray A., to Westland Aircraft Limited. Hook locking means for ejector release units. 4,148,451, Cl. 244-137.00R.
Schreiber, William L.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.;

Tseng, Ching Y.; and Sprecker, Mark A., 4,148,826, Cl. 260-586.00G.
Schreurs, Willy P., to GTE Sylvania Incorporated. Method of making fluorescent lamp. 4,148,935, Cl. 427-67.000.
Schrewe, Hans: *See*—
Holter, Karl; Schrewe, Hans; Diederich, Gerd; and Pleschiutschnigg, Fritz P., 4,148,145, Cl. 33-143.00L.
Schroeder, Thaddeus, to General Motors Corporation. Resistor coded theft deterrent system. 4,148,372, Cl. 180-114.000.
Schroter, Horst: *See*—
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Schrum, John. Urging apparatus for elongated articles. 4,148,463, Cl. 254-134.3FT.
Schubart, Rudiger; and Eholzer, Ulrich, to Bayer Aktiengesellschaft. Process for the production of thiazoline-2-thiones. 4,148,800, Cl. 260-306.70R.
Schuber, Helmuth, to Siemens Aktiengesellschaft. Process for the manufacture of a capacitor dielectric with inner blocking layers. 4,148,853, Cl. 264-37.000.
Schubert, Malvin L., to General Motors Corporation. Dual power brake booster. 4,148,247, Cl. 91-49.000.
Schubert, Warren R., to Colgate-Palmolive Company. Process for making a toilet soap bar containing polyethylene oxide. 4,148,743, Cl. 252-132.000.
Schuck, David B., to NCR Corporation. Optical transmission line by-pass relay. 4,148,558, Cl. 350-96.200.
Schulte, Fritz; Riecker, Johann G.; and Schroter, Horst, to Hartung, Kuhn & Co., Maschinenfabrik GmbH. Container for loose material, in particular hot coal. 4,148,694, Cl. 202-262.000.
Schulte, Hugo; Muller, Wolfgang; Schlaich, Jorg; and Mayr, Gunter, to Balke-Durr Aktiengesellschaft. Supporting structure for large natural draft cooling tower. 4,148,850, Cl. 261-109.000.
Schultz, Neithardt; Martens, Peter; and Vahlensieck, Hans-Joachim, to Dynamit Nobel Aktiengesellschaft. Method of preparing 1,1-difluoroethylene. 4,148,831, Cl. 260-653.500.
Schultz, Richard. Pelletizing press. 4,148,596, Cl. 425-331.000.
Schulz, Leo J., to Minnesota Mining and Manufacturing Company. Sheet sorting device. 4,148,475, Cl. 271-173.000.
Schutze, Eberhard: *See*—
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Schwaen, Werner: *See*—
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Schwander, Hansrudolf; and Zickendraht, Christian, to Ciba-Geigy AG. Naphtholactam dyestuffs. 4,148,805, Cl. 260-326.270.
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Schwartz, Willis T., Jr.; Dorfman, Edwin; and Hindersinn, Raymond R., to Hooker Chemicals & Plastics Corp. Halogen containing polyester resins having improved smoke-retardance. 4,148,841, Cl. 260-862.000.
Schwarz, Hans-Helmut: *See*—
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Science Applications, Inc.: *See*—
Coates, William J., Jr., 4,149,111, Cl. 315-169.400.
Science Union et Cie: *See*—
Vincent, Michel; Remond, Georges; and Pascaud, Xavier, 4,148,912, Cl. 424-295.000.
Sciex Inc.: *See*—
French, John B.; Reid, Neil M.; and Buckley, Janette A., 4,148,196, Cl. 62-55.500.
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Scott & Fetzer Company, The: *See*—
Bolin, Donald E., 4,149,046, Cl. 200-38.00A.
Seaman, Florence. Expandable shopping bag. 4,148,347, Cl. 150-1.700.
Sebek, Oldrich K.; and Dolak, Lester A., to Upjohn Company, The. Allylic methyl-hydroxylated novobiocins. 4,148,992, Cl. 536-13.000.
Seibt, Willie; and Weir, Donald R., to Sherritt Gordon Mines Limited. Treatment of dissolved basic nickel carbonate to obtain nickel. 4,148,632, Cl. 75-119.000.
Seidman, Ady: *See*—
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Seita, Toru: *See*—
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Sekido, Satoshi; Sotomura, Tadashi; and Ninomiya, Yoshito, to Matsushita Electric Industrial Co., Ltd. Solid state lithium-iodine primary battery. 4,148,976, Cl. 429-191.000.
Sekine, Kunio: *See*—
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Seliger, Robert L.; and Ward, James W., to Hughes Aircraft Company. Focusing ion accelerator. 4,149,055, Cl. 250-396.00R.
Semenov, Mikhail R.: *See*—
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Seppi, Edward J., to Varian Associates, Inc. Removal of spectral artifacts and utilization of spectral effects in computerized tomography. 4,149,081, Cl. 250-445.00T.
Seward, Thomas P., III: *See*—
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Sexton, Peter; and DeCristofaro, Nicholas J., to Allied Chemical Corporation. Homogeneous, ductile brazing foils. 4,148,973, Cl. 428-680.000.
Shah, Naresh R., to Union Carbide Corporation. Polymer/polyol compositions made from preformed polymer/polyols, processes for making same and processes for making polyurethane products therefrom. 4,148,840, Cl. 260-859.00R.
Shannon, John M., to U.S. Philips Corporation. Majority charge carrier bipolar diode with fully depleted barrier region at zero bias. 4,149,174, Cl. 357-13.000.
Sharova, Valentina P.: *See*—
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Shaw, David N., to Dunham-Bush, Inc. Solar augmented heat pump system with automatic staging reciprocating compressor. 4,148,436, Cl. 237-2.00B.
Shell Oil Company: *See*—
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Sherman, Benjamin F., Jr. Collector of direct dispersed and reflected waves. 4,148,297, Cl. 126-270.000.
Sherman, Benjamin F., Jr. Hemispherical collector of direct dispersed and reflected waves. 4,148,298, Cl. 126-270.000.
Sherman, Benjamin F., Jr. Hemitoroidal collector of direct dispersed and reflected waves. 4,148,299, Cl. 126-270.000.
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Shibakawa, Riichiro: *See*—
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Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,148,882, Cl. 424-122.000.
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Jefferson, Mark T.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuki, 4,148,883, Cl. 424-122.000.
Shigemori, Youjiro; and Mitumori, Yoshio, to Star Seimitsu Kabushiki Kaisha. Contactless buzzer. 4,149,153, Cl. 340-384.00E.
Shima, Keizo; Harada, Yuichi; and Ohya, Yoshinobu, to Daicel Ltd. Hot-melt adhesive compositions. 4,148,775, Cl. 260-30.80R.
Shimizu, Akihiko: *See*—
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Siebels, Johann, to Volkswagenwerk Aktiengesellschaft. Method of manufacturing a catalyst for catalytic purification of exhaust gases. 4,148,120, Cl. 29-157.00R.

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Jass, Wieland, 4,149,250, Cl. 364-414.000.
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Schliepe, Reinhard; Rindfleisch, Volker; Muller, Karl-Heinz; and Thieringer, Hans-Martin, 4,149,074, Cl. 250-311.000.
Schmelz, Helmut; and Schwaen, Werner, 4,149,173, Cl. 357-10.000.
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Sigwald, Jacques, to Automobiles Peugeot. Device for heating a carburetor. 4,148,287, Cl. 123-122.00E.

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Siki, Kazuhiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas purifying system for engines. 4,148,189, Cl. 60-290.000.

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Simmons, Michael J. Fluid dispenser. 4,148,417, Cl. 222-94.000.

Simon, Morris. Circular sliderule improvement. 4,149,068, Cl. 235-78.00R.

Simpson, Charles J.: *See—*
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Simpson, Ronald O.; and Cabrera, Pedro P., to Coulter Electronics, Inc. Backwash system for diluting apparatus. 4,148,859, Cl. 422-103.000.

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Sinden, Kenneth H.: *See—*
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Sinkovitz, Gloria D.; and Dixon, Kenneth W., to Calgon Corporation. Water-insensitive electroconductive polymers. 4,148,639, Cl. 96-1.50R.

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Smarook, Walter H., to Union Carbide Corporation. Expanded product having a plurality of cells open at one end. 4,148,954, Cl. 428-116.000.

Smathers, Edmond W.: *See—*
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Smith, Dewey H., Jr.; and Vernier, Vernon G., to Du Pont de Nemours, E. I., and Company. Antidepressant combination. 4,148,896, Cl. 424-248.560.

Smith, Donald E., to Procter & Gamble Company, The. Dermatological compositions. 4,148,874, Cl. 424-66.000.

Smith, Donald E., to Procter & Gamble Company, The. Dermatological compositions. 4,148,887, Cl. 424-180.000.

Smith, Donald E., to Procter & Gamble Company, The. Dermatological compositions. 4,148,893, Cl. 424-195.000.

Smith, Donald E., to Procter & Gamble Company, The. Dermatological compositions. 4,148,917, Cl. 424-310.000.

Smith, Donald E.; and Procter & Gamble Company, The. Dermatological compositions. 4,148,924, Cl. 424-344.000.

Smith, Edward W.: *See—*
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Smith, Fred T., to Sargent Industries, Inc. Front end loader. 4,148,517, Cl. 296-50.000.

Smith International, Inc.: *See—*
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Smith, John P., to English Electric Valve Company Limited. Inverter arrangements. 4,149,234, Cl. 363-133.000.

Smith, Kenneth C. Process for treatment of sewage in a gravity sewer. 4,148,726, Cl. 210-9.000.

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Smith, Randall C.: *See—*
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Smith, Robert T.; and Binek, Paul H., to Minnesota Mining and Manufacturing Company. System for flat ribbon optical fiber data communications link. 4,149,072, Cl. 250-199.000.

Smith, Russell: *See—*
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Smith-Vaniz, W. R., to AMF Incorporated. Acoustic bowling pin detection system. 4,148,481, Cl. 273-54.00E.

Smith-Vaniz, William R.; and Kaenel, Reginald A., to AMF Incorporated. Microprocessor controlled acoustic bowling pin detection system. 4,148,480, Cl. 273-54.00E.

Smith, Warren F., Jr., to Olin Corporation. Machinability of alloy 688 and modified 688 through the addition of Pb. 4,148,634, Cl. 75-157.500.

Smith, Warren F., Jr., to Olin Corporation. High temperature softening resistance of alloy 688 and modified 688 through the addition of Nb. 4,148,635, Cl. 75-157.500.

Smoketray, Inc.: *See—*
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Smolka, Heinz: *See—*
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Sochor, Jerzy R., to Elco Corporation. Zero insertion force connector for printed circuit boards. 4,148,537, Cl. 339-74.00R.

Societa Farmaceutici Italia S.p.A.: *See—*
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Societe Anonyme Dite Albert Rolland S.A.: *See—*
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Societe Anonyme Dite: Les Cables de Lyon: *See—*
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Societe d'Etudes et de Recherches Enzymologiques et pharmacologiques - Enzypha: *See—*
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Societe Generale de Techniques et d'Etudes: *See—*
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Societe Nationale des Poudres et Explosifs: *See—*
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Societe Nationale Elf Aquitaine: *See—*
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Societe Nationale Industrielle Aerospatiale: *See—*
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Societe Sifra: *See—*
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Sodini, Giancarlo; Canella, Marco; and Patricelli, Alberto, to Snamprogetti S.p.A. Method for the extraction of undesirable and/or toxic glucosidic compound from vegetables. 4,148,928, Cl. 426-430.000.

Sokhor, Mirra I.: *See—*
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Solomon, Graeme R.; and Churcher, Eric J., to British-American Tobacco Company Limited. Treatment of tobacco. 4,148,325, Cl. 131-134.000.

Somers, Edward V., to Westinghouse Electric Corp. Double reheat hydrogen/oxygen combustion turbine system. 4,148,185, Cl. 60-39.170.

Somerville, Francis S., to Northern Border Pipeline Company. Method of applying a bond-type crack arrestor to a pipe section of a pipeline. 4,148,127, Cl. 29-523.000.

Sonetsuji, Noboru: *See—*
Nagai, Yasuo; Touge, Takashi; Yamagata, Matazou; and Sonetsuji, Noboru, 4,149,071, Cl. 250-199.000.

Sony Corporation: *See—*
Murakami, Yoshikazu; and Komatsu, Yasutoshi, 4,149,127, Cl. 331-96.000.
Nagai, Kunio, 4,149,188, Cl. 358-139.000.
Nagai, Kunio, 4,149,189, Cl. 358-139.000.
Yamanaka, Seisuke; and Nishimura, Toshimichi, 4,149,182, Cl. 358-43.000.

Sorlie, Donald T.: *See—*
Bennett, Michael V.; and Sorlie, Donald T., 4,148,267, Cl. 111-85.000.

Sotirianos, Konstantin, to Dr. Ing. Hans Muller. Apparatus and method of stirring fluids. 4,148,590, Cl. 366-288.000.

Sotomura, Tadashi: *See—*
Sekido, Satoshi; Sotomura, Tadashi; and Ninomiya, Yoshito, 4,148,976, Cl. 429-191.000.

Spector, Donald. Hydraulic force resister. 4,148,479, Cl. 272-130.000.

Spector, George: *See—*
King, William G.; and Spector, George, 4,149,224, Cl. 362-157.000.

Sperry Rand Corporation: *See—*
Gorres, John M.; Hanson, Marlin M.; and Lund, Roger E., 4,149,265, Cl. 365-2.000.
Kochel, Leroy J.; Kalweit, Harvey W.; Gonzales, Arthur D.; Church, Clyde L.; and Ou-Yang, Paul H., 4,148,133, Cl. 29-571.000.
Miller, Harry; Narveson, Parm L.; Hancock, William R.; and Hsu, Joseph P., 4,149,148, Cl. 340-721.000.
Sauter, Gerald F.; and Honebrink, Roger W., 4,148,556, Cl. 350-96.130.

Spicer, Leonard A.; and McGee, Derek J., to Gestetner Limited. Ink for dry planographic printing. 4,148,767, Cl. 260-22.0TN.

Spie-Batignolles: *See—*
Cros, Pierre, 4,149,092, Cl. 290-54.000.

Spirk, Franz, to Siemens Aktiengesellschaft. Excitation winding arrangement for a synchronous electric machine having a rotor with salient poles. 4,149,100, Cl. 310-65.000.

Spofford, Walter R., to P. R. Mallory & Co. Inc. Linearization means and method for a thermistor temperature sensing system. 4,148,220, Cl. 73-362.0AR.

Spong, Fred W.: *See—*
Credelle, Thomas L.; Hannan, William J.; and Spong, Fred W., 4,148,636, Cl. 96-1.100.

Sprecker, Mark A.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,148,826, Cl. 260-586.00G.

Square D Company: *See—*
Andersen, Paul R.; and Kramer, Rodney C., 4,149,129, Cl. 335-21.000.

SSP Agricultural Equipment, Inc.: *See—*
Stafford, Thomas P., 4,148,594, Cl. 416-214.00R.

Stafford, Thomas P., to SSP Agricultural Equipment, Inc. Fan blade for wind machines. 4,148,594, Cl. 416-214.00R.

Stahle, Arno W.; and Bailey, Larry M., to Standard Oil Company (Indiana). Furniture fabric and coating. 4,148,770, Cl. 260-27.0BB.

Stalter, Robert J.; and Burkholder, Theodore B., to Goodyear Tire & Rubber Company, The. Method of molding a foamed mattress having a crown area with cored-out areas. 4,148,855, Cl. 264-54.000.

Stanadyne, Inc.: *See—*
Clark, Calvin M., 4,148,593, Cl. 408-204.000.
Moen, Alfred M., 4,148,438, Cl. 239-571.000.

Standard Alliance Industries, Inc.: *See—*
Wakabayashi, Takao, 4,148,261, Cl. 104-172.00S.

Standard Car Truck Company: *See—*
Geyer, Robert P., 4,148,469, Cl. 267-4.000.

Standard Container Company: *See—*
Leccese, Vincent L., 4,148,269, Cl. 113-116.0DD.

Standard Oil Company, The: *See—*
Brazdil, James F.; Suresh, Dev D.; and Grasselli, Robert K., 4,148,757, Cl. 252-432.000.

Standard Oil Company (Indiana): *See—*
Stahle, Arno W.; and Bailey, Larry M., 4,148,770, Cl. 260-27.0BB.

Standard Products Company, The: *See—*
Paulus, Peter V.; and Jackson, Norman C., 4,148,961, Cl. 428-358.000.

Stape, William J.: *See—*
Stauffer, Larry R.; Stape, William J.; and Donnelly, Charles W., Sr., 4,148,130, Cl. 29-566.300.

Star Seimitsu Kabushiki Kaisha: *See—*
Shigemori, Youjiro; and Mitumori, Yoshio, 4,149,153, Cl. 340-384.00E.

Stark, John, Jr., to RCA Corporation. Over-voltage amplitude prevention circuit for high voltage and deflection generating system. 4,149,209, Cl. 361-91.000.

Stark, Martin F.; and Whalen, Robert L. Phonograph record adapter. 4,148,491, Cl. 274-1.00R.

Startsev, Jury V.: *See—*
Kulabukhov, Vadim A.; Allakhverdov, Eduvard R.; Perlin, Boris A.; Shteinberg, Grigory S.; Afanasiev, Anatoly I.; Sheludko, Valentin V.; Nudelman, Boris I.; Volkov, Valery G.; Salomasov, Vasily F.; and Startsev, Jury V., 4,148,601, Cl. 432-109.000.

Statni vyzkumny ustav kozedelny: *See—*
Miculka, Zdenek; and Janirek, Vladislav, 4,148,947, Cl. 427-366.000.

Staufer, Adolf; and Hieblinger, Rudolf, to Fischer Gesellschaft m.b.H. Cross-country ski binding. 4,148,502, Cl. 280-615.000.

Stauffer Chemical Company: *See—*
Baker, Don R.; and Hyzak, Daniel L., 4,148,926, Cl. 426-333.000.
Baker, Don R.; and Hyzak, Daniel L., 4,148,927, Cl. 426-333.000.
Yu, Arthur J.; and Silberberg, Joseph, 4,148,842, Cl. 260-873.000.

Stauffer, Larry R.; Stape, William J.; and Donnelly, Charles W., Sr., to AMP Incorporated. Cable harness assembly apparatus. 4,148,130, Cl. 29-566.300.

Steele, Billy S., to E. L. Caldwell & Sons, Inc. Dumping transport vehicle particularly for cotton bolls. 4,148,527, Cl. 298-10.000.

Steffanus, Robert D.; and Anderson, David R., to BTGCO. Fluid propellant projectile firing device. 4,148,245, Cl. 89-7.000.

Steffen, Sylvester L. Method for controlling the curing of field-harvested grains with minimum energy consumption. 4,148,147, Cl. 34-27.000.

Steiger, Anton, to Sulzer Brothers Limited. Apparatus for operating a reciprocating internal combustion engine. 4,148,288, Cl. 123-139.00R.

Steimle, Wayne D. Tool kit for servicing turbo heads. 4,148,234, Cl. 81-3.00R.

Stein Industrie S.A.: *See—*
Pouderoux, Pierre, 4,148,686, Cl. 176-38.000.

Steiner, Paul. Air purifying and moistening apparatus. 4,148,849, Cl. 261-104.000.

Steinke, Heinrich: *See—*
Alscher, Arnold; Steinke, Heinrich; Collin, Gerd; and Storch, Gunter, 4,149,019, Cl. 568-804.000.

Stenkvist, Sven-Einar; and Widell, Bjorn, to ASEA Aktiebolag. Arc furnace for reducing metal oxides and method for operating such a furnace. 4,149,024, Cl. 13-11.000.

Stepan Chemical Company: *See—*
Nussbaum, Marvin L.; and Knaggs, Edward A., 4,148,821, Cl. 260-505.00S.

Sterling Drug Inc.: *See—*
Albertson, Noel F., 4,149,000, Cl. 546-97.000.
Eggensperger, Heinz; and Diehl, Karl-Heinz, 4,148,905, Cl. 424-272.000.
Lewis, Thomas R.; and Michne, William F., 4,148,794, Cl. 546-74.000.

Sterling, Warren M.: *See—*
Hartke, David; and Sterling, Warren M., 4,149,145, Cl. 340-739.000.

Stewart-Naumann Laboratories, Inc.: *See—*
Xanthopoulos, Piritheos, 4,148,316, Cl. 128-218.00S.

Stewart, Robert E.: *See—*
Jenkins, Stephen R.; Northrup, Thomas A.; and Stewart, Robert E., 4,149,239, Cl. 364-200.000.

Stewart, William H., Jr., to Milliken Research Corporation. Method for cleaning a dye-emitting orifice. 4,148,668, Cl. 134-22.00C.

Stich, Kurt: *See—*
Butter, Karl; Lechner, Manfred; and Stich, Kurt, 4,148,121, Cl. 29-157.00C.

Stievenart, Emile F.; Vackier, Leo N.; and Verlinden, Willy G., to AGFA-GEVAERT N.V. Processing apparatus. 4,148,274, Cl. 118-2.000.

Stiles, Walter E., to Norman, Ron L., a part interest. Oval compass. 4,148,144, Cl. 33-31.000.

Stine, Laurence O.: *See—*
Hemler, Charles L., Jr.; and Stine, Laurence O., 4,148,751, Cl. 252-419.000.

Stinson, Robert A., to Caterpillar Tractor Co. Hollow piston assembly for brakes or clutches. 4,148,384, Cl. 192-85.0AA.

Stobb, Inc.: *See—*
Stobb, Walter J., 4,148,391, Cl. 198-431.000.

Stobb, Walter J., to Stobb, Inc. Accumulator and conveyor for a row of items. 4,148,391, Cl. 198-431.000.

Stock, Albert M., to Du Pont de Nemours, E. I., and Company. Method of inhibiting cuprene formation in ethynylation reaction. 4,149,004, Cl. 568-855.000.

Stoger, Klaus: *See—*
Dotzer, Richard; and Stoger, Klaus, 4,148,204, Cl. 72-39.000.

Stojnov, Dimitraki J.: *See—*
Georgiev, Slavi A.; and Stojnov, Dimitraki J., 4,148,484, Cl. 273-85.00R.

Stoll, Alfred; and Kelp, Fritz, to Kraftwerk Union Aktiengesellschaft. Steam generator and pressurized-water nuclear reactors. 4,148,281, Cl. 122-32.000.

Stone-Platt Fluid Fire Limited: *See—*
Virr, Michael J., 4,148,186, Cl. 60-39.350.

Storch, Gunter: *See*—
Alscher, Arnold; Steinke, Heinrich; Collin, Gerd; and Storch, Gunter, 4,149,019, Cl. 568-804.000.

Storck, Hermann: *See*—
Becker, Tilo; Storck, Hermann; and Dyer, Terence A., 4,148,179, Cl. 57-350.000.

Strausburg, Larry D.: *See*—
Fogle, Ronald L.; and Strausburg, Larry D., 4,148,678, Cl. 156-384.000.

Strelow, Horst, to Siemens Aktiengesellschaft. Safety circuit for a data processing system producing binary signals. 4,149,069, Cl. 235-307.000.

Strich, Werner, to C. A. Weidmuller KG. Electrical terminal unit with fuse and interchangeable neon lamp. 4,149,215, Cl. 361-331.000.

Strickler, Ernst: *See*—
Luchinger, Paul; and Strickler, Ernst, 4,148,370, Cl. 177-210.0EM.

Stringham, Roger S.: *See*—
Toy, Madeline S.; and Stringham, Roger S., 4,149,016, Cl. 568-664.000.

Strittmatter, Kurt: *See*—
Holzner, Franz; Schmid, Ulrich; and Strittmatter, Kurt, 4,149,096, Cl. 307-115.000.

Strobel, Wolfgang; and Franke, Rainer, to Hoechst Aktiengesellschaft. Process for the preparation of a catalyst and catalyst used in olefin polymerization. 4,148,754, Cl. 252-429.00C.

Structure Instrumentation, Inc.: *See*—
Mercer, Alfred R., Jr., 4,148,369, Cl. 177-136.000.

Struve, Alfred, to Henkel Kommanditgesellschaft auf Aktien. Process for isolating sterols from fat processing residues. 4,148,810, Cl. 260-397.250.

Stuckert, Paul E.: *See*—
Carrubba, Francis P.; and Stuckert, Paul E., 4,149,218, Cl. 361-383.000.

Stuckmann, Dieter; and Jutte, Hans, to Gewerkschaft Eisenhutte Westfalia. Shield apparatus for use in tunnelling. 4,148,592, Cl. 405-141.000.

Stuertzel, Alfonse: *See*—
Jacobs, Stephan J.; and Stuertzel, Alfonse, 4,148,249, Cl. 91-485.000.

Stump, Paul E., to Babcock & Wilcox Company, The. Drawing technique. 4,148,207, Cl. 72-283.000.

Sturtevant, Robert L.; Karsay, Bela I.; and Gancy, Alan B., to Allied Chemical Corporation. Process for reducing water content of sulfuric acid in hydrocarbon alkylations. 4,148,836, Cl. 260-683.620.

Suami, Tetsuo. Antitumor agents. 4,148,921, Cl. 424-322.000.

Sueda, Yoshihisa; Koumura, Suketsugu; Hirabayashi, Kazuyoshi; Kenmochi, Hirohito; Terao, Hisashige; and Mori, Yoshio, to Sumitomo Chemical Company Limited. Metallized triazine reactive dyes. 4,148,790, Cl. 260-146.00T.

Sugar, Joseph, to American Safety Equipment Corporation. Dual sensitive retractor. 4,148,446, Cl. 242-107.40A.

Sugier, Andre; Courty, Philippe; Deschamps, Andre; and Gruhier, Henri, to Institut Francais du Petrole. Catalyst for oxidizing sulfur or sulfur compounds. 4,148,760, Cl. 252-455.00R.

Sullivan, Carrie A.: *See*—
Sullivan, Dennis J.; and Sullivan, Carrie A., 4,148,142, Cl. 30-293.000.

Sullivan, Dennis J.; and Sullivan, Carrie A. Carpet cutter. 4,148,142, Cl. 30-293.000.

Sullivan, Lawrence J.: *See*—
Reynolds, John L.; Sappington, Jack L.; and Sullivan, Lawrence J., 4,148,445, Cl. 242-86.50R.

Sulzer Brothers Limited: *See*—
Steiger, Anton, 4,148,288, Cl. 123-139.00R.

Sumi, Akira; and Kataoka, Koju, to Yokogawa Electric Works, Ltd. Analog signal processing system. 4,149,256, Cl. 364-602.000.

Sumino, Kazushige: *See*—
Yamada, Hideaki; Takahashi, Satomi; Sumino, Kazushige; Fukumitsu, Hirotaka; and Yoneda, Koji, 4,148,688, Cl. 195-29.000.

Sumita, Yutaka; and Watanabe, Seiichi. Method for controlling slippage between rolls and a slab in a continuous compression casting apparatus. 4,148,349, Cl. 164-4.000.

Sumitomo Aluminium Smelting Co., Ltd.: *See*—
Ohiwa, Tadaaki; and Kawase, Yosio, 4,148,706, Cl. 204-245.000.

Sumitomo Chemical Company Limited: *See*—
Sueda, Yoshihisa; Koumura, Suketsugu; Hirabayashi, Kazuyoshi; Kenmochi, Hirohito; Terao, Hisashige; and Mori, Yoshio, 4,148,790, Cl. 260-146.00T.
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 4,148,796, Cl. 546-199.000.

Sundeen, Joseph E.; and Hauck, Frederic P., to E. R. Squibb & Sons, Inc. 4,5-Disubstituted-1-aminoalkyl cyclohexenes. 4,149,001, Cl. 546-238.000.

Surakka, Jorma; and Lankinen, Matti, to Enso-Gutzeit Osakeyhtio. Multiple hydrocyclone arrangement. 4,148,722, Cl. 209-211.000.

Suresh, Dev D.: *See*—
Brazdil, James F.; Suresh, Dev D.; and Grasselli, Robert K., 4,148,757, Cl. 252-432.000.

Sustmann, Hans: *See*—
Heitzer, Xaver; Henseler, Gunther; and Sustmann, Hans, 4,148,622, Cl. 65-99.00A.

Suttles, James M., to Mead Corporation, The. Shelving assembly. 4,148,263, Cl. 108-1.000.

Sutton, Robert: *See*—
Larson, Charles; Van Nocker, Melvin; and Sutton, Robert, 4,148,392, Cl. 198-498.000.

Suys, Andre R.; and Van Landeghem, Willy K., to AGFA-GEVAERT N.V. Radiographic intensifying screens. 4,149,083, Cl. 250-486.000.

Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Sound motion picture projection apparatus. 4,148,567, Cl. 352-27.000.

Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Lens unit for motion picture projector and others. 4,148,569, Cl. 352-140.000.

Suzuki, Hiroshi; and Shio, Megumu, to Nippon Kogaku K.K. Microscope adaptable to various observing methods. 4,148,552, Cl. 350-87.000.

Swain, Richard S.: *See*—
Morez, Gene S.; and Swain, Richard S., 4,148,241, Cl. 84-1.030.

Swarts, John M.; and Lee, Zion S., to B. F. Goodrich Company, The. Composition for rubberizing steel cords. 4,148,769, Cl. 260-25.000.

Sweet, Alvin H.; and Sweet, Don A. Handleless hand racket. 4,148,483, Cl. 273-67.00R.

Sweet, Don A.: *See*—
Sweet, Alvin H.; and Sweet, Don A., 4,148,483, Cl. 273-67.00R.

SWS Silicones Corporation: *See*—
Martin, Eugene R., 4,148,838, Cl. 260-825.000.

Sy, Kian-Bon K.: *See*—
Gannon, Patrick M.; and Sy, Kian-Bon K., 4,149,245, Cl. 364-200.000.

Sylvester, Robert A., to Eastman Kodak Company. Instant processing film unit. 4,148,652, Cl. 96-76.00C.

Synthelabo: *See*—
Giudicelli, Don P. R. L.; and Najer, Henry, 4,148,923, Cl. 424-330.000.

Syracuse, Carmelo R. L.; and Chisek, Alan S., to Eastman Kodak Company. Roll package. 4,148,395, Cl. 206-414.000.

System Schultheis GmbH & Co.: *See*—
Kutzschebauch, Gerhard, 4,148,406, Cl. 414-458.000.

Szabo, Georges: *See*—
Ab der Halden, Charles; Espeillac, Marcellin; and Szabo, Georges, 4,148,749, Cl. 252-415.000.

Sze, Morgan C., to Lummus Company, The. Hydroliquefaction of sub-bituminous and lignitic coals to heavy pitch. 4,148,709, Cl. 208-10.000.

Szebiotko, Kazimierz: *See*—
Kozlowska, Halina; Zadernowski, Ryszard; Chodkowska-Lossow, Bozena; Bogaczynski, Kazimierz; and Szebiotko, Kazimierz, 4,148,789, Cl. 260-123.500.

Szmuskovicz, Jacob, to Upjohn Company, The. N-(2-aminocyclopentyl)alkanoylanilides. 4,148,913, Cl. 424-300.000.

Szmuszkovicz, Jacob, to Upjohn Company, The. Analgesic N-(2-aminocyclo aliphatic)cyanobenzamides. 4,148,914, Cl. 424-304.000.

Szydlo, Nicolas: *See*—
Poirier, Raymond; and Szydlo, Nicolas, 4,149,095, Cl. 307-400.0ET.

Tachibana, Yosiaki: *See*—
Terada, Ryuji; and Tachibana, Yosiaki, 4,149,202, Cl. 360-96.300.

Tachikawa Spring Company, Limited: *See*—
Sakurada, Kenichi; and Nishino, Takaichi, 4,148,522, Cl. 297-284.000.

Tada, Yoshinori; and Mitsui, Michio, to Ransburg Japan, Ltd. Atomization in electrostatic coating. 4,148,932, Cl. 427-31.000.

Taguchi, Michihiro, to Yamaha Hatsudoki Kabushiki Kaisha. Recoil-type starter for internal combustion engine. 4,148,291, Cl. 123-185.00B.

Takahashi, Eizi: *See*—
Tani, Yoshio; Takahashi, Eizi; Hachisuka, Mitunori; and Togami, Sin, 4,148,851, Cl. 264-23.000.

Takahashi, Kiyoshi: *See*—
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, 4,148,567, Cl. 352-27.000.
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, 4,148,569, Cl. 352-140.000.

Takahashi, Satomi: *See*—
Yamada, Hideaki; Takahashi, Satomi; Sumino, Kazushige; Fukumitsu, Hirotaka; and Yoneda, Koji, 4,148,688, Cl. 195-29.000.

Takahashi, Yutaka: *See*—
Nawa, Motoyuki; Takahashi, Yutaka; and Nishijo, Masaru, 4,148,333, Cl. 137-834.000.

Takeda Chemical Industries, Ltd.: *See*—
Nagase, Hiroshi, 4,148,625, Cl. 71-88.000.
Oka, Yoshikazu; Itoh, Katsumi; Miyake, Akio; and Hirata, Minoru, 4,148,897, Cl. 424-250.000.

Takeuchi, Keiji: *See*—
Kageyama, Satoshi; Takeuchi, Keiji; and Ogi, Keisuke, 4,149,142, Cl. 340-146.1BA.

Takeuchi, Tadasu, to Matsushita Graphic Communication Systems, Inc. Transmission of encoded facsimile signals at variable intervals commensurate with recording time. 4,149,192, Cl. 358-260.000.

Takeuchi, Yasuhira: *See*—
Narukawa, Hiroshi; Takeuchi, Yasuhira; Saito, Koichi; and Ohfuji, Yoshio, 4,148,781, Cl. 260-42.510.

Takeyama, Morio: *See*—
Masuhara, Eiichi; Nakabayashi, Nobuo; and Takeyama, Morio, 4,148,988, Cl. 526-318.000.

Takimoto, Hiroyuki: *See*—
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, 4,148,567, Cl. 352-27.000.
Suzaki, Kuniyoshi; Ashida, Akira; Itani, Takashi; Yamada, Tateo; Maeda, Masaya; Takahashi, Kiyoshi; and Takimoto, Hiroyuki, 4,148,569, Cl. 352-140.000.

Talaty, Chandravadan N.; Wright, Jeremy; and Zenker, Nicolas, to Merck & Co., Inc. Novel substituted alanines. 4,149,011, Cl. 562-434.000.

Tanabe, Takeshi: *See*—
Kaneshiro, Tetuya; and Tanabe, Takeshi, 4,149,056, Cl. 219-10.55R.

Tanaka, Hideo: *See*—
Torii, Sigeru; Tanaka, Hideo; and Mishima, Kiyoshi, 4,148,697, Cl. 204-78.000.

Tani, Yoshio; Takahashi, Eizi; Hachisuka, Mitunori; and Togami, Sin, to Fuji Photo Film Co., Ltd. Process for producing thermoplastic polymer sheets. 4,148,851, Cl. 264-23.000.

Taniguchi, Yasuo: *See*—
Morita, Minoru; Fujii, Yoshishige; and Taniguchi, Yasuo, 4,148,606, Cl. 422-21.000.

Tanimura, Kiyotaka. Vehicle light assembly. 4,149,141, Cl. 340-66.000.

Tanner, Lee E.; and Ray, Ranjan, to Allied Chemical Corporation. Zirconium-titanium alloys containing transition metal elements. 4,148,669, Cl. 148-3.000.

Tashkentsky Nauchno-Issledovatelsky i Proektny Institut Stroitelnykh Materialov "Niistromproekt": *See*—
Nudelman, Boris I.; Lisbaron, Vitaly I.; Kortnev, Vyacheslav P.; Sharova, Valentina P.; Imangulov, Vakel K.; and Afanasiev, Anatoly I., 4,148,620, Cl. 55-403.000.

Taylor, Craig V.: *See*—
Hodge, Allan M.; and Taylor, Craig V., 4,148,411, Cl. 220-331.000.

Taylor, Gene W.; and Dowdy, Edward J., to United States of America, Energy. Method and apparatus for detecting and measuring trace impurities in flowing gases. 4,148,612, Cl. 23-232.00R.

Taylor, Thomas A., Jr. Trailer hitch. 4,148,498, Cl. 280-482.000.

Taylor, William B.: *See*—
Bustos, Rafael T.; Taylor, William B.; Davis, Charles L.; and Kern, Lawrence G., 4,148,533, Cl. 312-223.000.

Tefft, Edward G.: *See*—
Kennedy, Richard W.; and Tefft, Edward G., 4,148,672, Cl. 148-33.500.

Temple, Carroll G., Jr.; Elliott, Robert D.; Rose, Jerry D.; and Montgomery, John A., to United States of America, America. Preparation and purification of citrovorum factor. 4,148,999, Cl. 544-258.000.

Tennessee Plastics, Inc. (TPI): *See*—
Goff, James E.; Hayes, Edwin T.; and Green, A. J. Seldon, 4,149,065, Cl. 219-365.000.

Tepper, Sidney. Pinball toy with ball ejector. 4,148,486, Cl. 273-121.00R.

Terada, Ryuji; and Tachibana, Yosiaki, to Hitachi, Ltd. Power-transmitting system for use in cassette tape recorder. 4,149,202, Cl. 360-96.300.

Terakawa, Toshiaki: *See*—
Miwa, Hirohide; and Terakawa, Toshiaki, 4,149,112, Cl. 340-768.000.

Terakura, Yukio: *See*—
Kuramochi, Koujiro; Watanabe, Kazuaki; and Terakura, Yukio, 4,148,229, Cl. 74-801.000.

Terao, Hisashige: *See*—
Sueda, Yoshihisa; Koumura, Suketsugu; Hirabayashi, Kazuyoshi; Kenmochi, Hirohito; Terao, Hisashige; and Mori, Yoshio, 4,148,790, Cl. 260-146.00T.

Termanis, Alexander, to Rank Organisation Ltd., The. Diffraction gratings. 4,148,549, Cl. 350-3.700.

Tews, Gunter; Wulff, Helmut; and Schade, Gerhard, to Dynamit Nobel Aktiengesellschaft. Crosslinking powder lacquers of polyesters. 4,148,989, Cl. 528-177.000.

Texaco Development Corp.: *See*—
Watts, Lewis W., Jr.; and Yeakey, Ernest L., 4,148,802, Cl. 260-307.00F.
Watts, Lewis W., Jr.; Lambert, Clifford L., Jr.; and Marquis, Edward T., 4,148,819, Cl. 260-453.0AL.

Texaco Inc.: *See*—
Lee, Kung-You; Kessler, Richard V.; and Kokturk, Uygur, 4,148,695, Cl. 203-63.000.

Texas Instruments Deutschland GmbH: *See*—
Limmer, Ernst; and Hofl, Helmut, 4,149,062, Cl. 219-121.00L.

Textron, Inc.: *See*—
Williams, Carol J., 4,148,948, Cl. 427-388.00C.

Thayer, Helen I.: *See*—
Pellegrini, John P., Jr.; and Thayer, Helen I., 4,148,981, Cl. 526-16.000.

Thieringer, Hans-Martin: *See*—
Schliepe, Reinhard; Rindfleisch, Volker; Muller, Karl-Heinz; and Thieringer, Hans-Martin, 4,149,074, Cl. 250-311.000.

Thompson, George V., to Pilkington P.E. Limited. Temperature compensating focusing in infrared zoom lenses. 4,148,548, Cl. 350-1.300.

Thompson, Wallace M.; and Beeland, William D., to American Hoist & Derrick Company. Vertical closed chamber baler. 4,148,253, Cl. 100-97.000.

Thomson-CSF: *See*—
Archambault, Yves; and Kaminsky, Didier, 4,149,126, Cl. 331-56.000.
Guenard, Pierre, 4,149,107, Cl. 315-3.600.
Poirier, Raymond; and Szydlo, Nicolas, 4,149,095, Cl. 307-400.0ET.

Thorogood, Douglas E. Certain Iodophor disinfectant compositions. 4,148,884, Cl. 424-150.000.

Throckmorton, Morford C., to Goodyear Tire & Rubber Company, The. Polymerization and copolymerization of trans-piperylene and isoprene. 4,148,983, Cl. 526-139.000.

Thuillier, Germaine; Mignonac, Sylviane S. J.; and Bessin, Pierre A. R., to Albert Rolland, S.A. Bis(2-phenoxyalkane carboxylic acids) and derivatives thereof and their use as medicaments. 4,148,915, Cl. 424-308.000.

Tibolla, Marcello: *See*—
Doria, Gianfederico; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, 4,148,900, Cl. 424-263.000.

Tischer, Kurt; and Fottinger, Walter, to Carl Freudenberg, Firma. "Breathing" lining material having a shaping effect composed of an oriented fiber layer and a randomly oriented fiber layer. 4,148,958, Cl. 428-196.000.

Togami, Sin: *See*—
Tani, Yoshio; Takahashi, Eizi; Hachisuka, Mitunori; and Togami, Sin, 4,148,851, Cl. 264-23.000.

Tokico Ltd.: *See*—
Aono, Masami, 4,148,379, Cl. 188-79.50P.
Haraikawa, Tetsuo, 4,148,380, Cl. 188-79.50B.
Hayashida, Yoshihiro, 4,148,190, Cl. 60-594.000.

Tokura, Naomi, to Nissan Motor Company, Limited. Internal combustion engine equipped with catalytic converter. 4,148,188, Cl. 60-276.000.

Tokyo Sanyo Electric Co., Ltd: *See*—
Ikeguchi, Shigehiko; Usui, Noboru; and Yamashita, Norio, 4,149,125, Cl. 331-1.00A.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Hirooka, Shikou; Mitsusono, Tetsuyoshi; Hashimoto, Takeshi; and Kusumoto, Katsuhiro, 4,149,105, Cl. 313-496.000.
Kageyama, Satoshi; Takeuchi, Keiji; and Ogi, Keisuke, 4,149,142, Cl. 340-146.1BA.
Satou, Kazuo; and Ueno, Mitsuhiko, 4,149,176, Cl. 357-42.000.
Yahata, Haruki; Honda, Shunsuke; and Kawasaki, Tadamichi, 4,149,258, Cl. 364-724.000.

Tomari, Seiji: *See*—
Kurachi, Hisashi; Sakamoto, Yoshihiro; Tsuchiya, Kaichi; Yamakami, Hiroshi; Miyamae, Tatsuo; and Tomari, Seiji, 4,148,937, Cl. 427-194.000.
Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, 4,148,968, Cl. 428-454.000.

Tomczak, Lawrence W.: *See*—
Crall, Frederick W.; and Tomczak, Lawrence W., 4,149,220, Cl. 361-395.000.

Tomecek, Charles J.: *See*—
McCandless, William; Leu, Robert F.; Kroder, Ernest A.; and Tomecek, Charles J., 4,148,161, Cl. 51-215.0CP.

Tomura, Yoshihiro, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Writing unit locking mechanism in a multiple-point writing implement including a mechanical pencil unit. 4,148,591, Cl. 401-32.000.

Tone, Junsuke: *See*—
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Routien, John B.; Shibakawa, Riichiro; and Tone, Junsuke, 4,148,880, Cl. 424-119.000.
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,148,882, Cl. 424-122.000.

Tone, Junsuki: *See*—
Celmer, Walter D.; Cullen, Walter P.; Moppett, Charles E.; Jefferson, Mark T.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuki, 4,148,883, Cl. 424-122.000.

Tone, Robert P.: *See*—
Redmond, John D., Jr.; and Tone, Robert P., 4,148,225, Cl. 74-243.00R.

Toone, Charles A. Insulated construction block. 4,148,166, Cl. 52-309.120.

Toray Industries, Inc.: *See*—
Morita, Minoru; Fujii, Yoshishige; and Taniguchi, Yasuo, 4,148,606, Cl. 422-21.000.
Yamane, Toshihiro; and Tsuchiya, Katsuhiro, 4,148,972, Cl. 428-515.000.

Torii, Sigeru; Tanaka, Hideo; and Mishima, Kiyoshi, to Ouchi Shinko Kagaku Kogyo Kabushiki Kaisha. Preparation of tetraalkylthiuram disulfides. 4,148,697, Cl. 204-78.000.

Torstensson, Bengt-Arne. Method and device for determining the pore water pressure in a soil. 4,148,212, Cl. 73-38.000.

Touge, Takashi: *See*—
Nagai, Yasuo; Touge, Takashi; Yamagata, Matazou; and Sonetsuji, Noboru, 4,149,071, Cl. 250-199.000.

Toy, Madeline S.; and Stringham, Roger S., to United States of America, Air Force. Perfluoroethers. 4,149,016, Cl. 568-664.000.

Toyo Kogyo Co., Ltd.: *See*—
Gotomyo, Yasuo, 4,148,516, Cl. 296-37.100.
Inabayashi, Akira; and Ninomiya, Harumi, 4,148,532, Cl. 308-36.000.

Toyo Soda Manufacturing Co., Ltd.: *See*—
Asami, Shunichi; Seita, Toru; and Shimizu, Akihiko, 4,148,979, Cl. 521-27.000.
Fukunishi, Takumi; and Miura, Masamichi, 4,148,628, Cl. 75-10.00R.

Toyoda Gosei Co., Ltd.: *See*—
Shiratori, Harunori; Yamazaki, Yoshio; Yoshimi, Takaharu; and Hori, Junichi, 4,148,503, Cl. 280-731.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kohama, Tokio; Obayashi, Hideki; Ozaki, Tadashi; and Nohira, Hidetaka, 4,148,286, Cl. 123-119.00A.
Kuramochi, Koujiro; Watanabe, Kazuaki; and Terakura, Yukio, 4,148,229, Cl. 74-801.000.
Moriya, Shigeru, 4,148,232, Cl. 74-869.000.
Ogita, Tamotu, 4,148,848, Cl. 261-39.00A.
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Siki, Kazuhiro, 4,148,189, Cl. 60-290.000.
Trans World Technology Laboratories, Inc.: *See*—
Zweig, Gilbert, 4,148,646, Cl. 96-49.000.
Transducers, Inc.: *See*—
Golding, Frank E.; and Farr, Emory W., 4,148,219, Cl. 73-141.00A.
Travis, John C.: *See*—
Green, Robert B.; Keller, Richard A.; Luther, Gabriel G.; Schenck, Peter C.; and Travis, John C., 4,148,586, Cl. 356-318.000.
Trop, Moshe; and Herbst, Joseph, to Weintraub, Morton; and Gendelman, Bernard. Method of electrophoretic purification of enzymes and peptides by means of an adjustable, specialized, geometrically located electrode system. 4,148,703, Cl. 204-180.00G.
TRW Inc.: *See*—
Bower, Robert W., 4,148,132, Cl. 29-571.000.
Tseng, Ching Y.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,148,826, Cl. 260-586.00G.
Tsou, Ivan H., to Grow Chemical Corp. Method for cathodic electrodeposition of coating compositions containing Diels-Alder adducts. 4,148,704, Cl. 204-181.00C.
Tsuchiya, Kaichi: *See*—
Kurachi, Hisashi; Sakamoto, Yoshihiro; Tsuchiya, Kaichi; Yamakami, Hiroshi; Miyamae, Tatsuo; and Tomari, Seiji, 4,148,937, Cl. 427-194.000.
Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, 4,148,968, Cl. 428-454.000.
Tsuchiya, Katsuhiro: *See*—
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Tsuda, Hiroshi, to Olympus Optical Company Limited. Shutter opening and closing mechanism for an electrographic apparatus. 4,148,581, Cl. 355-71.000.
Tucker, John G.: *See*—
Bellamy, William G.; Tucker, John G.; and Wells, Hugh A., 4,148,677, Cl. 156-187.000.
Tucker, Raymond M., to Rangaire Corporation. Touch control panel for induction heating cook-top. 4,149,217, Cl. 361-358.000.
Tulley, Margaret: *See*—
Brookes, Robert F.; Godson, David H.; Greenwood, Douglas; Tulley, Margaret; and Wakerley, Stanley B., 4,148,626, Cl. 71-92.000.
Tuttle, Carole K.: *See*—
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Uchida, Takashi: *See*—
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Udagawa, Teruo: *See*—
Kanda, Mamoru; Ishiwata, Shousuke; Horiguchi, Masaji; Udagawa, Teruo; and Mii, Seihei, 4,148,588, Cl. 366-56.000.
Ueda, Mitsuru: *See*—
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Ueno, Hideto: *See*—
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Ueno, Mitsuhiko: *See*—
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Uibel, Paul-Ulrich; and Aigl, Miroslav, to Vorwerk & Co Interholding GmbH. Shaft-mounting arrrangement for use in household mixers. 4,149,271, Cl. 366-314.000.
Ulrich, Hans R., to Schleich & Co. Toy figurine. 4,148,151, Cl. 46-126.000.
Ultrafab, Inc.: *See*—
Horton, Robert C., 4,148,953, Cl. 428-85.000.
Umehara, Akira: *See*—
Kondoh, Syunichi; Matsufuji, Akihiro; Umehara, Akira; Sato, Akira; and Ogawa, Akira, 4,148,658, Cl. 96-115.00P.
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Union Carbide Corporation: *See*—
Pruett, Roy L.; and Smith, James A., 4,148,830, Cl. 260-604.0HF.
Shah, Naresh R., 4,148,840, Cl. 260-859.00R.
Smarook, Walter H., 4,148,954, Cl. 428-116.000.
Union Oil Company of California: *See*—
Watanabe, David J., 4,148,360, Cl. 166-300.000.
Young, Dean A., 4,148,717, Cl. 208-251.00H.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
London, Richard C.; MacMillan, Alexander J. F.; and Roxburgh, Henry L., 4,148,311, Cl. 128-142.200.
U.S. Autotronics: *See*—
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United States of America
Administrator, National Aeronautics and Space Administration: *See*—
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Air Force: *See*—
Null, Fay E., 4,149,166, Cl. 343-18.00E.
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Army: *See*—
Adamson, James R., Jr., 4,149,228, Cl. 362-307.000.
Campbell, Donn V.; and Arnold, James J., deceased, 4,149,170, Cl. 343-885.000.
Gorfien, Harold; Rahman, Abdul R.; and Westcott, Donald E., 4,148,929, Cl. 426-576.000.
Jezek, Bruce W.; and McClung, Glen L., 4,148,126, Cl. 29-464.000.
Peters, Philip H., Jr.; and Wilbur, Donald A., 4,149,167, Cl. 343-18.00E.
Weber, John W., 4,149,169, Cl. 343-846.000.
Yuhash, Ladd; and Fischer, Gary W., 4,148,259, Cl. 102-93.000.
Zangrando, Roy A., 4,148,381, Cl. 192-2.000.
Commerce: *See*—
Green, Robert B.; Keller, Richard A.; Luther, Gabriel G.; Schenck, Peter C.; and Travis, John C., 4,148,586, Cl. 356-318.000.
Energy: *See*—
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Hathaway, Thomas J., 4,148,405, Cl. 414-207.000.
Holcombe, Cressie E., Jr., 4,148,663, Cl. 106-105.000.
Metz, Hugh J., 4,148,134, Cl. 29-573.000.
Taylor, Gene W.; and Dowdy, Edward J., 4,148,612, Cl. 23-232.00R.
Health, Education and Welfare: *See*—
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Bargeron, C. Brent; and Deters, Owen J., 4,148,585, Cl. 356-28.500.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Kendall, James M. Resolution enhanced sound detecting apparatus. 4,149,034, Cl. 179-1.0MF.
Leiser, Daniel B.; Goldstein, Howard E.; and Smith, Marnell. Fibrous refractory composite insulation. 4,148,962, Cl. 428-366.000.
Nagano, Satoshi. Circuit for automatic load sharing in parallel converter modules. 4,149,233, Cl. 363-71.000.
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Black, Dolphus H., 4,148,295, Cl. 126-270.000.
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U.S. Philips Corporation: *See*—
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Richter, Hermann; and Weber, Wendelin, 4,149,132, Cl. 335-262.000.
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Morris, James G.; and Lemkey, Franklin D., 4,148,671, Cl. 148-11.50A.
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Antos, George J., 4,148,715, Cl. 208-139.000.
Antos, George J., 4,148,833, Cl. 260-666.00A.
Halter, Mark A., 4,148,696, Cl. 204-59.00R.
Hemler, Charles L., Jr.; and Stine, Laurence O., 4,148,751, Cl. 252-419.000.
Hilfman, Lee, 4,148,759, Cl. 252-455.00Z.
Upjohn Company, The: *See*—
Bundy, Gordon L., 4,148,825, Cl. 260-586.00R.
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Sebek, Oldrich K.; and Dolak, Lester A., 4,148,992, Cl. 536-13.000.
Szmuskovicz, Jacob, 4,148,913, Cl. 424-300.000.
Szmuszkovicz, Jacob, 4,148,914, Cl. 424-304.000.
Usui, Noboru: *See—*
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Utsugi, Mikio, to Olympus Optical Company Limited. Tubular medical instrument having a flexible sheath driven by a plurality of cuffs. 4,148,307, Cl. 128-4.000.
Vackier, Leo N.: *See—*
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van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely N.V. Hay making machine. 4,148,176, Cl. 56-370.000.
van der Lely, Cornelis. Soil cultivating implements. 4,148,363, Cl. 172-47.000.
Van Hook, Donald. Novel convertible furniture construction. 4,148,521, Cl. 297-118.000.
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Veburg, John C., to Dale Electronics, Inc. Electrical resistor testing chamber. 4,148,534, Cl. 312-236.000.
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Vincent, Michel; Remond, Georges; and Pascaud, Xavier, to Science Union et Cie. Pharmaceutical compositions and methods of using the same. 4,148,912, Cl. 424-295.000.
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von Bonin, Wulf; Preis, Lothar; and von Gizycki, Ulrich, to Bayer Aktiengesellschaft. Polymerization products containing polycarbodiimides and vinyl monomers. 4,148,844, Cl. 260-874.000.
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Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, to Sumitomo Chemical Company, Limited. γ-Piperidinobutyrophenones. 4,148,796, Cl. 546-199.000.
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Yamanashi, Chusaku, to Fuji Kiko Babushiki Kaisha; and Ikeda Bussan Kabushiki Kaisha. Hinge fitting for a seat and backrest. 4,148,525, Cl. 297-367.000.
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Yamaoka, Kojiro; Azuma, Toshiro; and Fujisaki, Koichiro, to Kanzaki Kokyukoki Mfg. Co., Ltd. Vehicle power transmission with brake. 4,148,382, Cl. 192-4.00A.
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Yoneoka, Mikio; and Osugi, Minoru, to Mitsubishi Gas Chemical Co., Inc. Process for producing methyl formate. 4,149,009, Cl. 560-239.000.

Yoshida, Akihiko: *See—*
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Yoshimori, Norihisa, to Hitachi, Ltd. Method of manufacturing a coil heater of an indirectly-heated type cathode electrode of electronic tubes. 4,149,104, Cl. 313-340.000.

Young, Dean A., to Union Oil Company of California. Demetallization of petroleum feedstocks with zinc chloride and titanium tetrachloride catalysts. 4,148,717, Cl. 208-251.00H.

Young, Morris S., to Airco, Inc. Aluminum-stabilized multifilamentary superconductor and method of its manufacture. 4,148,129, Cl. 29-599.000.

Younkin, Harry A., to Hercules Incorporated. Radial end burner rocket motor. 4,148,187, Cl. 60-245.000.

Yu, Arthur J.; and Silberberg, Joseph, to Stauffer Chemical Company. Blends of a polycarbonate resin and interpolymer modifier. 4,148,842, Cl. 260-873.000.

Yuguchi, Hiroshi; Nunokawa, Makoto; and Nakai, Taiichiro, to Kokusai Denshin Denwa Co., Ltd. Frequency band compression of FDM using time expansion. 4,149,039, Cl. 179-15.55R.

Yuhash, Ladd; and Fischer, Gary W., to United States of America, Army. Sabot assembly for a subcaliber spin stabilized projectile. 4,148,259, Cl. 102-93.000.

Yung, Kai-Lim W.; Silverman, Bernard; and Menikheim, Virginia C., to Monsanto Company. Polyester having improved antistatic properties. 4,148,960, Cl. 428-288.000.

Zadernowski, Ryszard: *See—*
Kozlowska, Halina; Zadernowski, Ryszard; Chodkowska-Lossow, Bozena; Bogaczynski, Kazimierz; and Szebiotko, Kazimierz, 4,148,789, Cl. 260-123.500.

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Zelahy, John W.; Fairbanks, Norman P.; and Maegly, Robert E., to General Electric Company. Rotary labyrinth seal member. 4,148,494, Cl. 277-53.000.

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Zike, Donald R., to Pomona Service & Supply Co., Inc. Turret bagger. 4,148,169, Cl. 53-573.000.

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Oliver, Robert J., 4,148,455, Cl. 248-524.000.

Zimmer, John S. Golf cart. 4,148,496, Cl. 280-47.190.

Zinnes, Harold; and Schwartz, Martin L., to Warner-Lambert Company. 3-[2-(Dialkylamino)ethyl]-2-(benzyl)indoles. 4,148,922, Cl. 260-326.12R.

Ziobrowski, Bernard G., to Hercules Incorporated. Crystalline nickel chelate of 1-nitroso-2-naphthol and process for producing same. 4,148,667, Cl. 106-288.00Q.

Zundel, Arthur P., to National Can Corporation. Permanently attaching end opening means. 4,148,409, Cl. 220-267.000.

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Janssen, Peter J. M., to U.S. Philips Corporation. Servo system for reading from a disc-shaped record carrier containing signals coded in optical form. Re. 29,963, Cl. 358-128.000.

Kasper, Joseph G., to Tennant Company. Powered rotary brush. Re. 29,957, Cl. 15-83.000.

Kloos, Nantko: *See—*
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Mazzarella, Emil D.; Wood, Leonard J., Jr.; and Maliczyszyn, Walter, to National Starch and Chemical Corp. Method of sizing paper. Re. 29,960, Cl. 162-158.000.

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Mazzarella, Emil D.; Wood, Leonard J., Jr.; and Maliczyszyn, Walter, Re. 29,960, Cl. 162-158.000.

Russell, Lewis K., to Signetics Corporation. Collector-up semiconductor circuit structure for binary logic. Re. 29,962, Cl. 357-46.000.

Schippers, Heinz; Hensen, Friedhelm; and Lenk, Erich, to Barmag Barmer Maschinenfabrik AG. Simultaneous production of plurality of filament winding packages. Re. 29,959, Cl. 425-66.000.

Signetics Corporation: *See—*
Russell, Lewis K., Re. 29,962, Cl. 357-46.000.

Tennant Company: *See—*
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van Dorp, Cornelis; Kloos, Nantko; and Visser, Frits, to Internationale Octrooi Maatschappij Octropa B.V. Curable powder coating composition comprising a mixture of an alkoxylated polyamide-aldehyde resin and a polyester resin. Re. 29,961, Cl. 427-195.000.

Visser, Frits: *See—*
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Casella, Samuel J.; and Slaybaugh, Earl E., to Casella Bros. Sons Inc. Peach tree. 4,406, 4-10-79, Cl. 43.000.

Christensen, Jack E.; and Ellis, Arnold W., to Armstrong Nurseries, Inc. Dwarf peach tree. 4,403, 4-10-79, Cl. 43.000.

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Tegner, Raymond U. H., 251,544, Cl. D8-350.000.

Banez, Armin V. Combined rack and air drying unit for fiberoptic scopes or the like. 251,572, 4-10-79, Cl. D24-31.000.

Baudon, Maurice C., to S.A. Ets Lardenois. Brush head and handle. 251,517, 4-10-79, Cl. D4-35.000.

Bladis, Robert F. Storage cart. 251,550, 4-10-79, Cl. D12-25.000.

Boden, Ogden W. Cord locking device. 251,545, 4-10-79, Cl. D8-383.000.

Boudreau, Robert J.; and Cunard, Joel C., to Hedstrom Co. Child's swing. 251,518, 4-10-79, Cl. D6-10.000.

Boyajian, William M. Shelving for windows. 251,524, 4-10-79, Cl. D6-135.000.

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De Zinno, Theophile L. Article display cabinet. 251,525, 4-10-79, Cl. D6-150.000.

Fairchild Industries, Inc.: *See—*
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Gann, Larry V. Topwater worm lure. 251,570, 4-10-79, Cl. D22-27.000.
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Guedel, Arthur R. Finger brush. 251,516, 4-10-79, Cl. D4-13.000.
Hansen, Elmer K. Frame and mounting bracket assembly for ground tools. 251,562, 4-10-79, Cl. D15-33.000.
Hansen, Larry J. Holding tray for cooking in microwave ovens. 251,536, 4-10-79, Cl. D7-96.000.
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Johnson, Marshall B., to Wear-Ever Aluminum, Inc. Knife sheath. 251,569, 4-10-79, Cl. D22-14.000.
Kadota, Tosihiko, to Olympus Optical Company Ltd. Tuning adapter for tape recorders. 251,556, 4-10-79, Cl. D14-11.000.
Kasahara, Yoshiichi; and Kojima, Hiroshi, to Bridgestone Tire Company Limited. Vehicle tire. 251,554, 4-10-79, Cl. D12-146.000.
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Kilmer, Danny L.; and Stebe, Robert F., to SLI Industries. Rotary actuator for positioning magnetic head adjacent the surface of a magnetic disc. 251,559, 4-10-79, Cl. D14-40.000.
Klucznik, Paul J. Combined radio and tape player or similar article. 251,555, 4-10-79, Cl. D14-5.000.
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Kupperman, Sam; and Kupperman, Dennis, to Rub-A-Venture. Scrubbing element for attachment to palm or finger surfaces of an elastic glove. 251,539, 4-10-79, Cl. D7-178.000.
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Maresca, Edward J., to Cal-Mar Industries, Inc. Translucent interlocking panel member for ceilings or the like. 251,573, 4-10-79, Cl. D25-91.000.
McLeod, Allan L. Digital thermometer. 251,547, 4-10-79, Cl. D10-57.000.
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Pearson, Ronald D. Combined cabinet soffit and plate support unit. 251,528, 4-10-79, Cl. D6-191.000.
Perry, Francis O., to Logical Technical Services Corp. Digital multimeter or the like. 251,548, 4-10-79, Cl. D10-78.000.
Pittenger, Teresa R. B., to Amerock Corporation. Pull. 251,541, 4-10-79, Cl. D8-318.000.
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14.4 4,148,175
370 4,148,176

CLASS 57

58.89 4,148,177
264 4,148,178
350 4,148,179

CLASS 58

4 A 4,148,180
13 4,148,181
16 R 4,148,182
23 AC 4,148,184
23 R 4,149,146
23 V 4,148,183

CLASS 60

39.17 4,148,185
39.35 4,148,186
245 4,148,187
276 4,148,188
290 4,148,189
594 4,148,190
652 4,148,191
716 4,148,192

CLASS 62

3 4,148,194
6 4,148,195
55.5 4,148,196
256 4,148,197
292 4,148,198

CLASS 63

12 4,148,199

CLASS 64

27 C 4,148,200

CLASS 65

3 A 4,148,621
99 A 4,148,622

CLASS 70

358 4,148,201
431 4,148,202

CLASS 71

32 4,148,623
86 4,148,624
88 4,148,625
92 4,148,626

CLASS 72

21 4,148,203
39 4,148,204
176 4,148,205
239 4,148,206
283 4,148,207
342 4,148,208
441 4,148,209
457 4,148,210

CLASS 73

23 4,148,211
38 4,148,212
45.4 4,148,213
54 4,148,214
4,148,215
59 4,148,216
60.1 4,148,217
141 A 4,148,219
359 R 4,148,223
362 AR 4,148,220
425.4 R 4,148,221
650 4,148,222
829 4,148,218

CLASS 74

242.8 4,148,224
243 R 4,148,225
459 4,148,226
467 4,148,227
789 4,148,228
801 4,148,229
859 4,148,230
866 4,148,231
869 4,148,232

CLASS 75

3 4,148,627
10 R 4,148,628
52 4,148,629
74 4,148,630
101 BE 4,148,631
119 4,148,632
154 4,148,633
157.5 4,148,634
4,148,635

CLASS 76

101 R 4,148,233

CLASS 81

3 R 4,148,234

CLASS 82

21 R 4,148,235

CLASS 83

74 4,148,236
78 4,148,237
140 Re.29,958
152 4,148,238

CLASS 84

1.03 4,148,239
4,148,241
1.22 4,148,240
385 R 4,148,242

CLASS 86

23 4,148,243

CLASS 89

1.701 4,148,244
7 4,148,245

CLASS 90

11 D 4,148,246

CLASS 91

49 4,148,247
446 4,148,248
485 4,148,249

CLASS 96

1 SD 4,148,640
1.1 4,148,636
1.5 N 4,148,637
1.5 R 4,148,638
4,148,639
29 D 4,148,641
4,148,642
4,148,643
39 4,148,644
46 4,148,645
48 HD 4,148,659
49 4,148,646
59 4,148,647
73 4,148,648
75 4,148,649
76 C 4,148,650
4,148,651
4,148,652
77 4,148,653
91 D 4,148,654
91 N 4,148,655
100 R 4,148,656
4,148,657
115 P 4,148,658

CLASS 99

403 4,148,250
519 4,148,251
630 4,148,252

CLASS 100

97 4,148,253
179 4,148,254
247 4,148,255

CLASS 101

350 4,148,256

CLASS 102

24 HC 4,148,257
37.4 4,148,258
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CLASS 104

138 R 4,148,260
172 S 4,148,261

CLASS 105

131 4,148,262

CLASS 106

38.3 4,148,660
54 4,148,661
67 4,148,662
105 4,148,663
161 4,148,664
236 4,148,665
288 Q 4,148,666
4,148,667

CLASS 108

1 4,148,263
145 4,148,264

CLASS 109

59 R 4,148,265

CLASS 111

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CLASS 112

264.1 4,148,268

CLASS 113

116 DD 4,148,269

CLASS 114

248 4,148,270

CLASS 116

67 R 4,148,271
219 4,148,272
325 4,148,273

CLASS 118

2 4,148,274
49.5 4,148,275

CLASS 119

18 4,148,276
20 4,148,277
60 4,148,278
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103 4,148,280

CLASS 122

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CLASS 123

32 EG 4,148,282
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78 C 4,148,284
119 A 4,148,286
119 D 4,148,285
122 E 4,148,287
139 R 4,148,288
140 MC 4,148,289
140 R 4,148,290
185 B 4,148,291
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4,148,298
4,148,299
271 4,148,300
4,148,301
307 R 4,148,302

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2 E 4,148,305
2 N 4,148,306
2 R 4,148,303
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4 4,148,307
15 4,148,308
24 A 4,148,309
138 R 4,148,310
142.2 4,148,311
145.6 4,148,312
145.8 4,148,313
214 E 4,148,314
218 C 4,148,315
218 S 4,148,316
263 4,148,317
269 4,148,318
349 B 4,148,319
419 PG 4,148,320
420 A 4,148,321
464 4,148,322

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27 T 4,148,323

CLASS 131

23 R 4,148,324
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173 4,148,326
4,148,327
175 4,148,328

CLASS 132

7 4,148,329
34 C 4,148,330

CLASS 133

8 R 4,148,331

CLASS 134

22 C 4,148,668

CLASS 135

4 R 4,148,332

CLASS 136

206 4,149,025

CLASS 137

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484.8 4,148,335
491 4,148,336
493 4,148,337
515.7 4,148,338
553 4,148,339
599 4,148,340
834 4,148,333

CLASS 138

105 4,148,341
109 4,148,342
178 4,148,343

CLASS 144

3 R 4,148,344
185 4,148,345
311 4,148,346

CLASS 148

3 4,148,669
6.15 R 4,148,670
11.5 A 4,148,671
33.5 4,148,672
153 4,148,673

CLASS 149

2 4,148,674

CLASS 150

1.7 4,148,347

CLASS 152

379.1 4,148,348

CLASS 156

91 4,148,675
181 4,148,676
187 4,148,677
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403 4,148,680
405 R 4,148,681
416 4,148,682
556 4,148,683

CLASS 162

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158 Re.29,960

CLASS 164

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112 4,148,352
132 4,148,350
150 4,148,351
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CLASS 165

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140 4,148,357

CLASS 166

256 4,148,358
261 4,148,359
300 4,148,360

CLASS 169

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CLASS 172

22 4,148,362
47 4,148,363
58 4,148,364
781 4,148,365

CLASS 173

28 4,148,366

CLASS 174

32 4,149,026
52 R 4,149,027
65 R 4,149,028

CLASS 175

171 4,148,367
329 4,148,368

CLASS 176

36 R 4,148,685
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CLASS 177

136 4,148,369
210 EM 4,148,370
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CLASS 178

18 4,149,029
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CLASS 179

1 C 4,149,033
1 CN 4,149,032
1 GQ 4,149,031
1 MF 4,149,034
1.5 R 4,149,035
15 BF 4,149,038
15 BL 4,149,037
15 BT 4,149,036
15.55 R 4,149,039
17 A 4,149,040
27 CA 4,149,041
99 4,149,042
100.11 4,149,043
175.3 R 4,149,044

CLASS 180

114 4,148,372
163 4,148,374

CLASS 181

117 4,148,375

CLASS 182

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CLASS 187

52 LC 4,148,377

CLASS 188

74 4,148,378
79.5 B 4,148,380
79.5 P 4,148,379

CLASS 192

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4 A 4,148,382
64 4,148,383
85 AA 4,148,384
106.1 4,148,385

CLASS 193

37 4,148,386
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CLASS 194

102 4,148,388

CLASS 195

29 4,148,688
65 4,148,689
115 4,148,690
142 4,148,691

CLASS 198

389 4,148,389
400 4,148,390
431 4,148,391
498 4,148,392
503 4,148,393

CLASS 200

37 R 4,149,045
38 A 4,149,046
50 A 4,149,047
61.54 4,149,048
67 G 4,149,049
144 B 4,149,050
148 A 4,149,051
153 LA 4,149,052
157 4,149,053
318 4,149,054

CLASS 201

36 4,148,692

CLASS 202

173 4,148,693
262 4,148,694

CLASS 203

63 4,148,695

CLASS 204

59 R 4,148,696
78 4,148,697
118 4,148,698
129.85 4,148,699
130 4,148,700
157.1 R 4,148,701
159.12 4,148,702
180 G 4,148,703
181 C 4,148,704
192 E 4,148,705
245 4,148,706
297 W 4,148,707
301 4,148,708

CLASS 206

386 4,148,394
414 4,148,395
521 4,148,396

CLASS 208

10 4,148,709
11 R 4,148,710
27 4,148,711
78 4,148,712
111 4,148,713
114 4,148,714
139 4,148,715
177 4,148,716
251 H 4,148,717

CLASS 209

3.1 4,148,718
139 R 4,148,719
166 4,148,720
211 4,148,721
4,148,722
4,148,723
403 4,148,724
481 4,148,725
559 4,148,397
668 4,148,398

CLASS 210

9 4,148,726
33 4,148,727
58 4,148,728
104 4,148,729
169 4,148,730
223 4,148,731
232 4,148,732
361 4,148,733
512 R 4,148,735

CLASS 219

10.55 B 4,149,057
10.55 R 4,149,056
51 4,149,058
56 4,149,059
73 4,149,060
76.14 4,149,061
121 L 4,149,062
121 LM 4,149,064
146.23 4,149,063
365 4,149,065
505 4,149,066
523 4,149,067

CLASS 220

7 4,148,407
200 4,148,408
267 4,148,409
269 4,148,410
331 4,148,411

CLASS 221

75 4,148,412
92 4,148,413
278 4,148,414

CLASS 222

76 4,148,415
94 4,148,416
4,148,417
183 4,148,418
189 4,148,419
494 4,148,420

CLASS 223

87 4,148,421

CLASS 224

5 R 4,148,422
218 4,148,424
258 4,148,423

CLASS 227

130 4,148,425

CLASS 228

146 4,148,426

CLASS 229

15 4,148,427
4,148,428
36 4,148,429
54 R 4,148,431
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CLASS 232

39 4,148,432

CLASS 233

26 4,148,433

CLASS 235

78 R 4,149,068
307 4,149,069
435 4,148,434
495 4,149,070

CLASS 236

13 4,148,435

CLASS 237

2 B 4,148,436

CLASS 239

424 4,148,437
571 4,148,438

CLASS 241

28 4,148,439
54 4,148,440

CLASS 242

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55.19 A 4,148,443
55.3 4,148,442
68.2 4,148,444
71.2 4,148,449
86.5 R 4,148,445
107.4 A 4,148,446
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128 4,148,448

CLASS 244

124 4,148,450
137 R 4,148,451
195 4,148,452

CLASS 248

219.4 4,148,456
221.3 4,148,454
524 4,148,455
660 4,148,453

CLASS 249

130 4,148,457

CLASS 250

199 4,149,071
4,149,072
201 4,149,073
311 4,149,074
336 4,149,075
396 R 4,149,055
402 4,149,076
423 P 4,149,077
439 R 4,149,078
445 T 4,149,079
4,149,080
4,149,081
4,149,082
486 4,149,083
492 A 4,149,084
4,149,085
504 4,149,086
507 4,149,087
551 4,149,088
563 4,149,089
566 4,149,090
4,149,091

CLASS 251

148 4,148,458
149.6 4,148,459
206 4,148,460

CLASS 252

8.55 R 4,148,736
32.7 E 4,148,737
4,148,738
4,148,739
33.2 4,148,740
62.1 P 4,148,741
102 4,148,742
132 4,148,743
182 4,148,744
301.1 W 4,148,745
316 4,148,746
400 A 4,148,747
408 4,148,748
415 4,148,749
416 4,148,750
419 4,148,751
421 4,148,752
423 4,148,753
429 B 4,148,756
429 C 4,148,754
4,148,755
432 4,148,757
436 4,148,758
455 R 4,148,760
455 Z 4,148,759
512 4,148,761
544 4,148,762

CLASS 254

86 R 4,148,461
133 R 4,148,462
134.3 FT 4,148,463
150 FH 4,148,464
186 HC 4,148,465

CLASS 256

47 4,148,466

CLASS 260

2.3 4,148,763
22 CB 4,148,765
22 D 4,148,764
22 TN 4,148,767
23 H 4,148,766
4,148,768
25 4,148,769
27 BB 4,148,770
4,148,771
29.1 SB 4,148,773
29.2 EP 4,148,772
30.8 R 4,148,774
4,148,775
33.4 R 4,148,776
37 EP 4,148,778
37 N 4,148,777
40 R 4,148,779
42.46 4,148,780
42.51 4,148,781
45.7 P 4,148,782
45.8 N 4,148,783
4,148,784
112.5 R 4,148,785
4,148,786
4,148,787
4,148,788
123.5 4,148,789
146 T 4,148,790
207.1 4,148,791
239.3 A 4,148,792
4,148,793
301 4,148,798
306.7 R 4,148,800
306.7 T 4,148,799
307 F 4,148,802
307 G 4,148,801
308 A 4,148,803
308 D 4,148,804
326.12 R 4,148,922
326.27 4,148,805
326.29 4,148,806
343.21 4,148,807
343.41 4,148,808
345.3 4,148,809
397.25 4,148,810
408 4,148,811
429.3 4,148,812
429.7 4,148,814
439 R 4,148,813
4,148,815
4,148,816
448.2 E 4,148,818
448.8 R 4,148,817
453 AL 4,148,819
463 4,148,820
505 S 4,148,821
571 4,148,823
585 B 4,148,824
586 G 4,148,826
586 R 4,148,825
590 C 4,148,827
4,148,828
601 R 4,148,829
604 HF 4,148,830
653.5 4,148,831
658 R 4,148,832
666 A 4,148,833
671 B 4,148,834
682 4,148,835
683.62 4,148,836
683.74 4,148,837
825 4,148,838
857 G 4,148,839
859 R 4,148,840
862 4,148,841
873 4,148,842
874 4,148,843
4,148,844
878 R 4,148,845
885 4,148,846

CLASS 261

39 A 4,148,847
4,148,848
104 4,148,849
109 4,148,850

CLASS 264

23 4,148,851
33 4,148,852
37 4,148,853
45.3 4,148,854
48 4,148,734
54 4,148,855
71 4,148,856
87 4,148,857

CLASS 266

57 4,148,467
225 4,148,468

CLASS 267

4 4,148,469

CLASS 269

101 4,148,470
321 F 4,148,471
325 4,148,472

CLASS 271

20 4,148,473
170 4,148,474
173 4,148,475
194 4,148,476

CLASS 272

56.5 SS 4,148,477
73 4,148,478
130 4,148,479

CLASS 273

26 A 4,148,555
54 E 4,148,480
4,148,481
67 A 4,148,482
67 R 4,148,483
85 R 4,148,484
86 B 4,148,485
121 R 4,148,486
127 B 4,148,487
146 4,148,488
160 4,148,489
176 B 4,148,490

CLASS 274

1 R 4,148,491
15 R 4,148,492

CLASS 277

12 4,148,493
53 4,148,494
115 4,148,495

CLASS 280

47.19 4,148,496
154.5 R 4,148,373
479 A 4,148,497
482 4,148,498
490 R 4,148,499
604 4,148,500
615 4,148,502
711 4,148,501
731 4,148,503
756 4,148,504
784 4,148,505

CLASS 281

45 4,148,506

CLASS 283

34 4,148,507

CLASS 290

54 4,149,092

CLASS 292

258 4,148,508
270 4,148,509

CLASS 294

1 R 4,148,510
26 4,148,512
55 4,148,513
67 R 4,148,511
83 R 4,148,514

CLASS 296

37.1 4,148,516
50 4,148,517
65 R 4,148,518
97 H 4,148,519
187 4,148,515

CLASS 297

16 4,148,520
55 4,148,523
118 4,148,521
284 4,148,522
345 4,148,524
367 4,148,525

CLASS 298

8 R 4,148,526
10 4,148,527
22 J 4,148,528

CLASS 299

1 4,148,529

CLASS 307

10 BP 4,149,093
12 4,149,094
115 4,149,096
212 4,149,097
255 4,149,098
279 4,149,099
400 ET 4,149,095

CLASS 308

3 R 4,148,531
36 4,148,532

CLASS 310

65 4,149,100
214 4,149,101
320 4,149,102
361 4,148,530

CLASS 312

223 4,148,533
236 4,148,534
304 4,148,535

CLASS 313

315 4,149,103
340 4,149,104
400 4,149,106
496 4,149,105

CLASS 315

3.6 4,149,107
8.5 4,149,108
58 4,149,109
107 4,149,110
169.4 4,149,111
219 4,149,113

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301 4,149,115
315 4,149,117
341 4,149,116
640 4,149,118
731 4,149,114

CLASS 324

32 4,149,119
132 4,149,120

CLASS 325

321 4,149,121
363 4,149,122

CLASS 328

168 4,149,123

CLASS 330

298 4,149,124

CLASS 331

1 A 4,149,125
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CLASS 333

165 4,149,128

CLASS 335

21 4,149,129
154 4,149,130
202 4,149,131
262 4,149,132

CLASS 336

30 4,149,133
57 4,149,134
65 4,149,135
217 4,149,136

CLASS 337

295 4,149,137
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91 R 4,148,538
99 R 4,148,539
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126 RS 4,148,542
143 R 4,148,543
144 T 4,148,541
154 R 4,148,544
184 M 4,148,545
192 R 4,148,546
258 R 4,148,547

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3 R 4,149,139
58 4,149,140
66 4,149,141
146.1 BA 4,149,142
146.3 AG 4,149,143
147 R 4,149,144
384 E 4,149,153
521 4,149,154
524 4,149,155
545 4,149,156
554 4,149,157
568 4,149,158
587 4,149,159
632 4,149,161
636 4,149,162
661 4,149,160
684 4,149,163
701 4,149,164
703 4,149,152
721 4,149,148
739 4,149,145
740 4,149,165
753 4,149,149
754 4,149,150
760 4,149,147
765 4,149,151
768 4,149,112

CLASS 343

18 E 4,149,166
4,149,167
112 D 4,149,168
846 4,149,169
885 4,149,170

CLASS 346

1 4,149,171
140 R 4,149,172

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96.13 4,148,556
96.20 4,148,557
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96.21 4,148,553
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96.23 4,148,560
105 4,148,561
255 4,148,562
285 4,148,563
292 4,148,564

CLASS 351

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CLASS 352

27 4,148,566
4,148,567
109 4,148,568
140 4,148,569
180 4,148,570

CLASS 354

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15 4,148,572
145 4,148,573
195 4,148,574
299 4,148,575
320 4,148,576

CLASS 355

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35 C 4,148,577
41 4,148,579
52 4,148,580
71 4,148,581
97 4,148,582

CLASS 356

2 4,148,583
5 4,148,584
28.5 4,148,585
318 4,148,586
356 4,148,587

CLASS 357

10 4,149,173
13 4,149,174
18 4,149,175
42 4,149,176
46 Re.29,962
50 4,149,177

CLASS 358

10 4,149,178
20 4,149,179
4,149,180
31 4,149,181
43 4,149,182
75 4,149,183
81 4,149,184
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174 4,149,190
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77 4,149,198
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96.3 4,149,202
119 4,149,204
123 4,149,205
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91 4,149,209
95 4,149,210
119 4,149,211
172 4,149,212
191 4,149,213
256 4,149,214
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358 4,149,217
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CLASS 362

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403 4,149,230

CLASS 363

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60 4,149,232
71 4,149,233
133 4,149,234

CLASS 364

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103 4,149,236
107 4,149,237
200 4,149,238
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4,149,246
414 4,149,247
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4,149,250
424 4,149,251
456 4,149,252
505 4,149,253
510 4,149,254
524 4,149,255
602 4,149,256
705 4,149,257
724 4,149,258
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745 4,149,261
817 4,149,260
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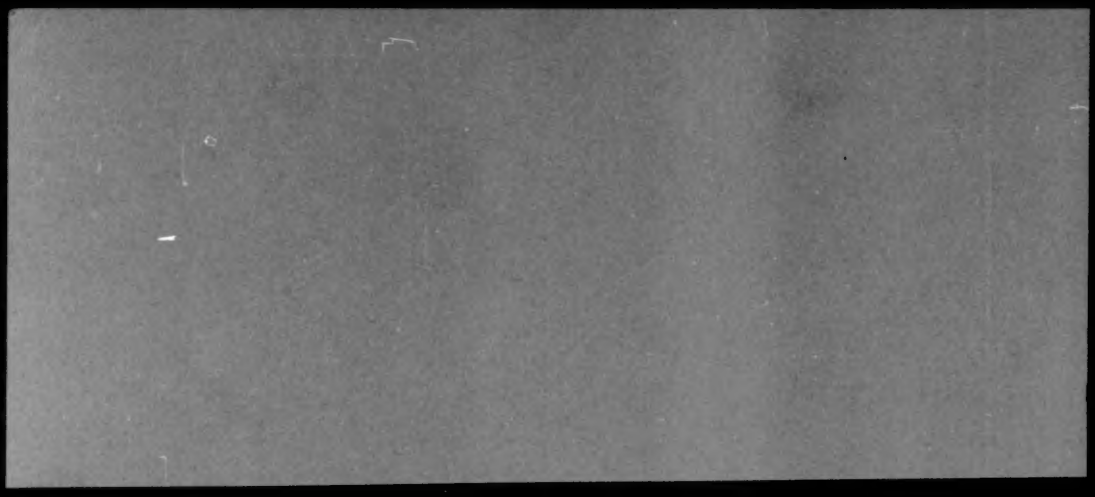

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